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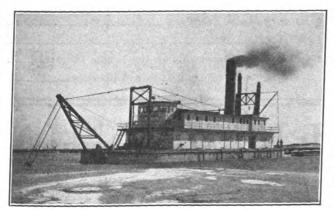
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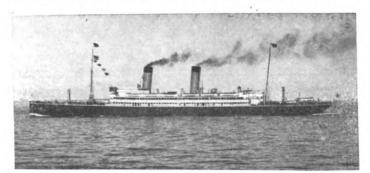
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PACIFIC MARINE REVIEW

VOL. X.

SEATTLE, WASH., U. S. A., JANUARY, 1913

No. 1

PREFERENTIAL DUTY AN AID TO AMERICAN SHIPPING

BY E. PRANCKE

The Hon. Wm. Sulzer, governor of the state of New York since January 1st, 1913, and formerly congressman from the Eleventh District, is not only well known to the entire Pacific Northwest as the consistent and tireless worker for the interests of Alaska, but has long since become a national figure in his endeavor to rehabilitate the American Merchant Marine, of which he is one of the staunchest supporters. It is thus regretted by every American interested in the upbuilding of our Merchant Marine that Mr. Sulzer has left the House at a time when legislation which he so vigorously championed through his bill, H. R. 14102, is to be favorably received and strongly supported by the most prominently active Democrats, to be joined by progressive Republicans, in both the House and

The absence of this able and distinguished chairman of the Committee on Foreign Affairs will be keenly felt in the coming session of Congress. Every intelligent student on the subject of the present deplorable condition of our Merchant Marine is fully aware that the United States Congress is solely to blame.

One hundred and twenty years ago the policy of preferential duty principally constituted the creation of a successful American Merchant Marine on the seven seas and after eighty-four years, of which fifty years were embraced by a continued predominance of republican administration, it seems that we may confidently expect to have the policy of the fathers of the Republic revived and befittingly re-adopted to suit the modern requirements of this great and independent nation. This country, consisting of one hundred million high-minded and remarkably intelligent people, a world power of preponderance with barely a deep-sea tonnage of 800,000 at its disposal, 400,000 tons less than it possessed in 1812, when the United States of America counted approximately only 10,000,000 inhabitants, is in merchant marine affairs sadly lacking.

The Pacific Marine Review has for years past consistently striven for the revision of our existing inadequate navigation laws, although one of our Eastern contemporcould some time ago not comprehend "why the people of the Pacific Coast should wish for the revision of such laws." It is, however, a pleasant surprise to note the now changed attitude of this journal, actually applauding the preferential duty policy of the Sulzer bill, which, with editorial comment, was reproduced in full in the June, 1912, issue of the Pacific Marine Review.

This policy was the principal part of our once justified navigation laws and in successful operation during the period from 1792 to and including 1828, favoring American built ships and not those flying the flag of foreign nations.

It was the act of July 20th, 1790, which together with succeeding acts of December 31st, 1792, and February 18th, 1793, fully established the policy of discriminating duties, comprised the fundamental principles of a system that practically gave to American shipowners and users a nearly complete monopoly of American over-sea commerce.

In 1824 reciprocal relations were established with the Netherlands, then one of the foremost trading nations, Prussia, the imperial Hanseatic cities of Hamburg, Lubeck and Bremen, the dukedom of Oldenburg, Norway, Sardina and Russia, and by the act of January 7th, the several

acts imposing discriminating tonnage duties were suspended in these cases. In 1827 England came in with the following proviso: "The intercourse between the United States and his Britannic Majesty's possessions in the West Indies and on the Continent of North America, shall not be affected by any of the provisions of this article (Art. 2) but each party shall remain in the complete possession of its rights with respect to such intercourse. ("Convention of Commerce, August 6th, 1827.") In 1828 President John Quincy Adams issued a proclamation suspending discriminating duties upon Hanoverian vessels, in 1829 upon Austrian vessels, 1835 Mecklenburg Schwerin; 1836 Tusany, and in 1837 upon Grecian vessels. By 1840 twelve nations had met the reciprocity proposition and in their ports American vessels with cargoes, whether the produce of the United States or not, were admitted on the same terms as their own. In all cases, however, some restriction was observed, which gave an advantage in general trade to British bottoms. We were then in the proud position of wielding a sway over a comparatively large fleet of off-shore vessels, but today even much smaller nations, such as Norway and Italy, each outclass the United States with more than a double amount of deep sea tonnage in operation under their respective flags. Is it necessary to continue revealing our maritime history? How the foreign trade of American vessels was found shattered with the end of the Civil war is only too well known and is truly a sad recollection. The fact, however, remains that the policy of preferential duty, so successfully pursued, met its Carthago in 1828.

What have we done since for our merchant ships and the shipbuilding industries? Nothing of consequence to sufficiently warrant the investment of capital for the much desired and necessary rehabilitation of an American Merchant Marine in the off-shore trade.

Why Congress did not seek then, nor has since honestly tried to unify and perfect the administration of the act regulating over-sea commerce to make it all the more beneficial in its operation instead of overthrowing so mercilessly the whole fabric of the system as previously existing is impossible to comprehend. That this beneficial policy was cast adrift so absolutely heedless of consequences must indeed be considered as one of the greatest political blunders ever committed in the maritime history

We can but rejoice in the expression of Mr. Wilson, the president-elect, who realizes to the fullest extent the existing deplorable condition of our merchant marine, as one of his recent speeches so vividly proves and one may feel assured that Mr. Wilson's message to Congress will treat this vital subject exhaustively, which it cannot be stated was done by Mr. Taft nor during his administration.

The Hon. Oscar W. Underwood, chairman of the Ways and Means Committee of the National House, is a staunch supporter of the preferential duty policy. The Hon, J. W. Alexander, chairman of the House Committee on Merchant Marine and Fisheries, is another Democrat of marked influence amongst many others who favor such propaganda. in which every thoughtfully minded, every genuine American patriot will whole-heartedly join and from which movement much may be expected in the coming session of Congress where the Sulzer bill is awaiting its unanimous passage.



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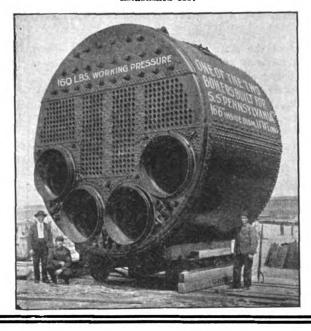
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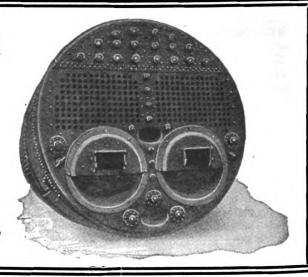
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The Hon. Wm. Sulzer, when addressing the House, being in Committee of the Whole House on the state of the Union, on May 21st, 1912. read his short and concise bill and while dwelling on the necessity of change in existing commercial treaties containing the favored-nation clause, remarked: "There seems to be but one objection, so far as I can learn, to a return to this policy of the fathers, and this objection comes from the advocates of ship subsidies who declare that we have commercial treaties with foreign governments containing the favored nation clause, and in order to inaugurate the policy of preferential duties it will be necessary to change our commercial treaties and this cannot be done without giving these favored nations one year's notice. This objection, however, is more apparent than real, for there is no doubt that the change could be made if this government wanted to make it and in a year's notice to bring it about would cause no great delay, especially when we consider that nothing has been done for our deep sea shipping in more than a quarter of a century."

The treaties of commerce and navigation with foreign governments, reciprocally prohibiting discriminating tonnage duty and custom duties now number thirty, the latest being a new one with Japan signed February 21st, 1911.

If this bill or its equivalent becomes law, it certainly will mean the revival of American shipping in years hence and it would mean renewed and continued activity for our shipbuilding industries and in time to come replace the American flag where it belongs, on the high seas and in every foreign port of the world.

Let the democratic party honestly and diligently strive for that time to return and constantly pave the way with: "Equal rights to all and special privileges to none," to regain our just share of the world's commerce and save the nation over \$300,000,000 annually, which we are now paying to foreign vessels which carry our passengers, mails and the enormous quantities of American products.

In 1835 the House of Commons of Great Britain appointed a select committee to inquire into the cause of shipwrecks in the British Merchant Service and this committee dwelt on American shipping as follows: "The ships of the United States of America frequenting the ports of England are superior to those of a familiar class amongst the ships of Great Briain-the commanders and officers being generally considered to be more competent as seamen and navigators and more uniformly persons of education than the commanders and officers of British ships of a similar size and class trading from England to America. American ships (1835-6) sailing from Liverpool to New York have preference over English vessels sailing to the same port, both as to freight and the rate of insurance; the higher wages being given, their whole equipment is maintained in a higher state of perfection, so that fewer losses occur." And further this report showed that while within "late years" the American shipping had increased in the proportion of 12% per cent per annum, British shipping had in the same period increased only in the proportion of 11/2 per cent per annum.

It was preferential duty which induced capital to invest liberally in shipping, permitting the acquisition of such perfection in this American enterprise, that the result was the firm establishment of our prestige on the high seas.

Although the wooden clipper ships of those days were pigmies in comparison with trans-oceanic leviathans of present times, in point of naval architecture they were nevertheless "beauties," walking the water of the oceans as it were, they could not be beaten in regards to sailing and maneouvering qualities, nor from the carrying and earning points of view.

America's inventive faculty has made us the foremost inventive people of the world and has thus laid the groundwork of our wonderful industrial growth and prosperity, but if we justly value progress and continued prosperity in every line and in all directions, we have to eventually change our attitude towards this sadly neglected and unjustly burdened Merchant Marine of ours.

What we have produced in vessels of wood construction, we can accomplish in the construction of steel. We vividly prove this in the building of formidable battleships and cruisers, but our present government would not even permit the Pacific Mail Steamship Company to build four first class 37,000 ton passenger and freight steamers, intended for the Oriental service via the Panama canal, because this deserving steamship company has the good fortune, or the misfortune, as the case may fit, to be controlled by one of our largest and foremost railroad corporations

All these are indisputable facts!

It was no small compliment the distinguished body of Anglo Saxon cousins paid us, as above referred to, and if the government will let us, we can re-establish this prestige. We possess the brain, the brawn and the energy, including the constant desire for such re-establishment. We prove our ability, ingenuity and superiority in all our actions, in all walks of life almost daily, but we are actually prevented from giving this evidence in Merchant Marine affairs.

The revival of the policy of preferential duty, as of old, is in the writer's opinion the only just solution of a problem which has dragged heedlessly along and has so seriously handicapped this nation for the last quarter of a century and more.

We may well have faith in the Sulzer bill and the incoming administration of which the governor of the state of New York is a party member, and if the Democratic party re-establishes our prestige and places the American flag on the seven seas, this new administration will go down in history as the greatest benefactor of a great progressive and deserving nation.

THE HARTER ACT AND PROPOSED AMENDMENT

An article on the proposed amendment to the "Harter Act," and the reasons why same should not pass, was published in the December issue of the Pacific Marine Review. The various steamship lines engaged in foreign trade are taking active steps to present their side of the question to the Senate. The San Francisco Chamber of Commerce, which sent a committee to Washington to argue against the Wilson Bill, a bill supposed to ameliorize the conditions of seamen, but which only adds further burdens to shipowners, has been instructed to work against this proposed amendment, the Seattle and Tacoma Chambers of Commerce have been asked to petition for the same end, and various other bodies throughout the United States have been and are working in the defence of this bill. The Nelson Bill has been returned to the Senate by the committee "without recommendation," and discussion on it is likely to be begun this month. To all those who are interested in shipping, who desire to do what may be done to assist and not retard the shipping industry and who are looking to a rehabilitation of the American merchant marine some time, it is urged that what may be done will be.

The Wilson Bill, with its onerous burdens on shipowners, is but one item, the Nelson Bill is but another, but a few more bills, all passed, of similar nature, will bury any slight hope we may have of seeing the American flag flying on ships in foreign ports.



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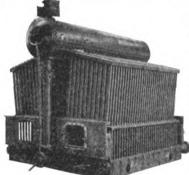
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THE SEAMEN'S BILL AS VIEWED BY THOSE IT AFFECTS

R OBERT DOLLAR, president of the Robert Dollar Steamship Company, sends us the following regarding the Seamen's Bill and the disastrous effects it will have if passed in its present form:

"It has a very catchy title. An act to abolish involuntary servitude imposed on seamen, etc. It passed the House of Representatives last session and is now before the subcommittee of the Senate, and it was only here that the shipowners of the United States woke up, as it practically got there without any opposition. That over sixty of the largest shipowners from all parts of the country appeared before the committee showed the great interest that it has aroused. All the shipowners were agreed that the vicious and bad parts of the bill should be eliminated. The bill is designed to cover all vessels, either domestic or foreign, and it was clearly shown that on account of the great diversity of trades and kinds of vessels, ranging from the small freighters to the largest ocean passenger ship, no blanket law could be made to be fair and just to all. Harvey Goulder, from the Great Lakes, told the committee that they might as well give all the inmates of a hospital the same kind of medicine as to try a blanket law to cover all. The greater part of the bill we are in favor of, namely:

- 1. To abolish imprisonment.
- 2. To abolish flogging.
- 3. To replace men when they desert.
- 4. To provide larger accommodations.
- 5. To give them 1 ounce more butter and 1 quart water.
- 6. To do away with advances.
- 7. To do away with attaching their wages.
- 8. To pay them their wages promptly.

No. 5 was evidently put in to make the public believe we did not give them enough to eat. I produced our regular bill of fare and explained in addition to that when vessels are in port we give them lunch at 9 a. m. and 3 p. m., so they get five meals a day. I claimed they were the best fed and best paid sailors in the world. Mr. Furuseth said this was true with the probable exception of Australia.

No. 7 was also to gain sympathy. Instead of forty-eight hours, I suggested to make the time of payment to be not longer than three hours after the bank opens and the services of a commissioner could be obtained.

But we are opposed to the following:

- 1: To allow laxer discipline.
- 2. To pay one-half their wages at every port at which the vessel touches.
- 3. To annul all contracts of foreign sailors on a foreign ship made in their own country.
- 4. To provide a way for all foreign crews to desert on arrival in this country, and to accomplish all this to abrogate about twenty-one treaties.
- 5. To allow the crew to stop a vessel for being unseaworthy when none of the officers think so.
- 6. Language test; this is to prevent Chinese and Japanese crews coming to this country.
- 7. Provides two A. B. sailors for each boat on passenger ships.
- 8. Provides that one man can make an affidavit and the collector of customs must withhold clearance.

On those which we oppose:

1st and 2nd: Discipline. The act will permit the crew to go ashore at any port, so that crews will be continually changing, and by always having strange crews it will increase the peril of life at sea on passenger steamers.

3rd and 4th: Annuls all foreign shipping articles providing for advances and allotments, making it easy for crews to desert and practically provides that all crews will be furnished by the unions, as they will have all the cer-

tificated men, thereby establishing by law the biggest trust in the United States.

Eighth provides the machinery for any irresponsible person to tie up any ship, even if there is no just cause for doing it, he conveniently dropping out of sight and cannot be punished for it.

- 5. At present the crews require an officer to join with them in the protest that the vessel is unseaworthy. If this goes through, any time the crew want an extra day ashore they can tie up the vessel.
- 6. Language test. Until the statement was contradicted it was said that England necessitated a language test. The law is that crews shipped in Great Britain and between the Brest and the Elbe had to pass the test, but provided they did not come from any British colony. All this latter part had been carefully concealed. On this coast we are principally interested in Japanese, and this law is aimed at them, but seeing that their officers are Japanese, they will not be affected at all.
- 7. Provided two A. B. sailors for each lifeboat. The only qualification necessary is that he has served three years before the mast, although he may never have been in a boat at all, and the man who is an experienced boatman, but has not served three years before the mast, would be rejected. One senator brought up the question of lifesaving crews on the lakes who had never sailed, so the best boatmen in the world would be rejected. Imagine all foreign crews going before our inspectors to get a certificate of competency.

Those are the principal parts of the bill which the Sailors' Union openly claim will raise the sailors' wages of the world and would raise the rate of freight that the dear American public will have to pay.

Mr. Furuseth in congressional records explains that foreign shipowners, knowing the conditions which will confront them in sending a ship to America, would protect themselves by charging a high enough rate of freight to compensate them for their crew deserting and having their vessel tied up, and for having to ship a new crew from the Sailors' Union at any exorbitant rate they may chose to charge, and as all crews must talk the language of the officers, each crew must be of the nationality of the officers, so if this becomes a law the United States will be a good place for a foreign ship to keep away from.

In your last issue you mentioned the case of the Chinese crew on the steamer "Hazel Dollar." After reading the log and hearing the reports of the miraculous escape from being a total loss with all hands, I wrote a letter to Captain Gow appreciating the great feat he had performed and requested him to convey to the officers and every man on board our thanks and great appreciation for having brought that vessel into port, requesting him to pay every member of the Chinese crew any sums that in his judgment he considered right and to be most liberal. This he carried out. Men with yellow skin are not all bad; neither are men with white skin all good. Captain Gow. big man that he is, reported to me that only for the excellent crew he had I never would have seen the ship again, but I fully appreciate the fact that had we not had such a commander on board it might have ended otherwise."

Mr. R. P. Schwerin writes:

"Last spring while I was in Washington I spent about six hours before the Committee on Merchant Marine and Fisheries, giving them my views upon the Seamen's Bill, and that hearing is in the records of the committee.

"I have nothing further to say than what I said there at that time.



"Of course, you know how hard I tried to rehabilitate the American mercantile marine in the way of building four large steamers of about 37,000 tons displacement, and that I was prohibited from doing so by the action of the various Chambers of Commerce on the Pacific Coast."

Mr. H. F. Alexander, president of the Alaska Pacific Steamship Company, states:

"With reference to your article on the Seamen's Bill, will say I have read this with much interest and am glad to see the good work that you are doing. It is needless to say that I heartily concur in Captain Francke's views, and sincerely trust the work being done by the various shipping interests on both the Atlantic and Pacific coasts will bring forth beneficial results to the extent of having the dangerous elements eliminated before the bill is passed.

You, of course, realize that there are a great many good features in the bill, and, if we can retain these, eliminating the disastrous features, which are serious, it will be a good thing."

Mr. J. C. Ford, president of the Pacific Coast Steamship Company, makes the following statement in a letter addressed to this office under date of December 27th, 1912:

"If the bill that passed the House at the last session is not materially changed in the Senate, it will be a most serious blow, indeed, to the American merchant marine. Shipowners engaged in the coastwise trade on the Pacific Coast are already staggering under very heavy operating expenses, a large portion of which is made up of wages paid to sailors and other steamship employes. The wages on this coast average, I believe, more than double those being paid on the Atlantic coast. If the shipowners are obliged to increase the number of men in the deck department, as provided by the Wilson bill, in addition to submitting to the number of other exactions provided for in the bill, it will ultimately cause the laying up of a number of steamers on this coast which are now barely able to operate."

The following was prepared by the Pacific Coast Steamship Company in defence of this bill and recently circulated throughout the United States Senate:

"We beg to say that it is an old and true saying that 'vessels are intended to plow the seas, not to rot by the wall'; and in the case of coastwise vessels stopping at a number of intermediate ports, each of which may be a safe port, it is imperative that the vessel be given quick dispatch. The provision in the Seamen's Bill limiting the day's work to nine hours in such ports would in many cases result in such detentions as would materially and needlessly prolong the voyage and needlessly delay delivery at destination of passengers, mail and freight. If nine hours be made the seaman's statutory working day no more can be required of him, no matter how urgent the need of further services nor how willing the master or owner may be to pay a reasonable compensation for overtime. That nine-hour requirement would enable the crew at any time to tie up a vessel at the end of nine hours' work in any intermediate port—a port where other assistance was not available—although fifteen minutes' additional service would enable the vessel to proceed on her voyage. That is, a vessel might be delayed for many hours simply because, in order to secure her departure, the seamen need work an additional fifteen minutes over the nine hours provided by statute. Considering the modern needs for quick transportation, the absolute necessity for expedition in the movement of vessels, and the vicissitudes to which they are subjected, it seems as unreasonable to provide a hard and fast rule as to hours of service while on a coasting voyage as it would be to provide a hard and fast rule regarding the hours that services should be rendered on board a man-of-war in action, or by a soldier in

mercial war. If that be true, or moderately true, as to ordinary commercial dealings, it is emphatically true with reference to transportation. In the foreign trade it is war between vessels of the different countries; and we need not call attention to the fact that the United States, by its stringent regulations of its shipping, has practically eliminated it from foreign transportation. Between domestic ports the war between water carriers and rail carriers is no less strenuous; and we need not do more than call the committee's attention to the great preponderance of such rail transportation over that by water. The railway, save in a few particulars, to wit, in the matter of safety appliances and boiler inspection, etc., and the requirement that it shall not discriminate between persons, and that its employes in train service shall not be required to be on duty more than sixteen hours in twenty-six, has been left practically free from statutory control. It constructs its roadbed, rails, bridges, engines and cars of such material and in such manner as it shall choose and may employ any one; while on the other hand its competitor, the water carrier—one of the chief dependencies of the people for the maintenance of reasonable transportation rates—has been burdened with numberless regulations regarding the material that shall be used, the manner of construction, the particular appliances that shall be carried, the licensing of its officers, etc., and etc., and etc., and now it is proposed to further 'straight jacket' the water carrier by providing that the deck crew of any vessel shall consist of a designated class who may at any safe port abandon a vessel; or may there refuse to render services in loading or discharging cargo that may be necessary for her dispatch if it so be that such services need extend for fifteen minutes beyond nine hours in any one day. It is evident that the more time it takes to make a given voyage the more vessels will need be employed to furnish transportation for a given quantity of freight, and therefore the services of a greater number of seamen be required. The larger the number required the shorter will be the supply and the better the opportunity of the seamen's unions to make and enforce such demands as they may choose to assert. In this connection it should be remembered that no seaman need ship if he does not wish to so do, and that the unions may instruct their members not to ship on any vessel, or on certain vessels, unless there be carried in each department such number as they may choose to require; that a certain rate of wages be paid; and that no seaman shall render overtime service. Nor is it any answer to this to say that the present able representative of the seamen's unions would not countenance such procedures. The bill, if enacted in its present form, will inevitably give the unions such power, and experience has shown that when power is possessed it sooner or later will be used. We respectfully submit that if the use of such 'straight jacket' shall by the enactment of this bill be permitted, the vessels employed in the American mercantile marine will not increase either in number or in

"It is a common saying that modern business is a com-

"As to the alleged servitude of the seaman: We take it that there has always been a sufficient reason for requiring that a seaman who had voluntarily shipped on a vessel for a given voyage should render the services which he had contracted to perform; that is, why he was not allowed to desert the vessel before the end of the voyage. That rule, plainly based on the inherent necessities of the business, has been in force ever since ships have navigated the ocean. That rule, based on such necessity—as much a necessity now as ever—it is by this bill proposed shall be entirely abrogated, and the crew be expressly given liberty to, almost advised to, abandon the ship at any stage of the voyage provided only that the vessel be at the time



in a safe port; and this regardless of what the conditions may be at such port; that is, entirely regardless of whether it be possible for the master to there procure the necessary crew to further navigate his vessel on her intended voyage. Take, for instance, the case of a vessel whose crew has deserted her in an Alaskan port: In most such ports it would be impossible to find a sufficient number of men. to say nothing of men having the requirements specified in the bill, wherewith to man the ship. The same would be true in very many of the ports of call elsewhere in the specific coastwise trade. The necessary result of which would often be either that the master find his way to some port where the necessary number of seamen could be found, and have them transported to his ship; or his crew, having deserted, might the next day turn around and say that they would reship provided they were given such advance in wages as they should demand. Even a crew procured elsewhere might on arrival at the ship themselves desert and leave the ship still helpless. So that, under the following provisions of the bill (lines 6-7, page 1, and lines 1-4, page 2), to-wit:

"In case of desertion or casualty resulting in the loss of one or more of the seamen, the master must ship, if obtainable, a number equal to the number of those whose services he has been deprived of by desertion," etc.

the master might be compelled to ship those who had deserted, at such wages as they might choose to demand, because in very many cases no other 'able seamen' would be available.

'The penalty provided for desertion (lines 19-21 of page 7), forfeiture of wages and clothing left on board, would be no adequate protection against the results stated, because only half wages would be forfeited and such, if any, clothing as he left on board would be worthless. He could even compel a waiver of such forfeiture as a condition that he re-ship.

"The seamen's representative may appear before you and represent the sailor as a badly abused, down-trodden member of the community. But a very little investigation will serve to convince you that the seamen of this day and generation are and have shown themselves to be as well able to take care of their interests as are any other organized body of laborers. Whatever may be represented regarding the so-called 'slavery' of a seaman-by reason of the fact that he has been held bound to the service of the ship for such voyage as he has voluntarily contracted to perform—the fact is that such binding is an inherent necessity of the business; and he is no more a 'slave' than is one who has enlisted in the army or navy. As an offset to his being so bound the seaman has rights that are not possessed by any other laborer; that is, he is entitled to his wages for the entire voyage whether he be able to perform any service or not; is entitled at the expense of the ship to be cured of any sickness or injury that he may suffer or receive; even if his own negligence be the sole cause of such sickness or injury; and this even if to secure medical attendance the ship need deviate from her voyage and be delayed five or six days; the "Iroquoise, 194 U. S., 240; and in the event of misfortune to the vessel he must be returned to the port at which he shipped.

"We submit that a seaman who has voluntarily shipped for a given voyage should be required to remain on the ship until that voyage be completed; the correlative obligation being that the ship is bound to the seaman for the same time; that is, her master cannot, except for gross misconduct, discharge a seaman before the end of the voyage.

"It should be apparent that a seaman's opportunities for employment will be in direct ratio to the number of ships employed, and therefore that regulations, apparently in the interest of seamen, which tend to limit the number of ships in operation must necessarily react on the seamen. Of such character we regard most of the provisions of the bill to which we have referred.

"In conclusion we submit that the necessary effect of this bill, if enacted in its present form, will be to place every ship owner entirely at the mercy of the Seamen's Unions. This because of the qualifications which the bill requires that a seaman shall have before he shall be employed, coupled with the fact that seamen in all ports where seamen congregate are organized into strong and effective unions. That is, if the bill in its present form be enacted the only resource of a shipowner for a crew will be some seamen's union, and, therefore, the unions may fix such working and living conditions regarding a seaman's employment as they may choose, and may make the compensation of the seaman such sum as the unions may demand. Not only that, while the bill fixes a minimum schedule for deck crews, it does not fix a maximum, and therefore a seamen's union might not only demand such advance as it chose in the going rates of wages, but also refuse to furnish seamen for any vessel unless it employed many more seamen than were necessary, or the bill provides.

"We suppose that the passage of this bill is urged by the representatives of the seamen's unions with one end in view, and that the House of Representatives has passed it, and that you and your committee and the Senate will consider it with a somewhat different end in view.

"In so far as the bill provides better accommodations for seamen, nine usual working hours when in 'home ports,' that is, where stevedores to do the ship's work are available; prompt payment of a seaman's wages at the end of the voyage, and kindred matters which benefit the seaman at a reasonable expense to the ship without crippling its serviceable operation, we are in full sympathy with the union's end in view. So, also, in so far as the purpose of the bill is to secure greater safety for life and property at sea we are in full sympathy with the end which we suppose the House had, and you and your committee and the Senate will have, in view. But we believe that such latter ends may be better reached by other means than are provided by this bill. This bill, if enacted in its present form, will fail to produce the results we suppose hoped for by the House and Senate. It will not fail to realize the fondest hope of the seamen's unions, and in so doing will add new barriers to those already blocking the progress of American shipping."

Mr. C. W. Thomas, assistant manager of the International Mercantile Marine Company, expresses the following views regarding this bill:

"We have with pleasure read Captain Francke's ably written article on 'Our Merchant Marine and the Seamen's Bill' and can only express to you our opinion that the U. S. Senate will never pass this bill without very material modification, for in its present form it would be most detrimental to all shipping interests, and would not, it seems to us, result in the promotion either of the American merchant marine nor actually in the improvement of seafaring men."

The Seattle Chamber of Commerce sends us their views on this subject as expressed in the resolution prepared by the Transportation Bureau and adopted by the Board of Trustees:

"Whereas, At the last session of Congress H. R. 23673, commonly known as the 'Seamen's Bill,' or the 'Wilson Bill,' passed the House and is now before the Senate Committee on Commerce, and

"Whereas, The title of this bill, namely, 'An act to abolish the involuntary servitude imposed upon seamen of the merchant marine of the United States while in foreign ports; and the involuntary servitude imposed upon seamen



of the merchant marine of foreign countries while in the ports of the United States; to prevent unskilled manning of American vessels; to encourage the training of boys in the American merchant marine for the future protection of life at sea; and to amend laws relating to seamen, is misleading. The effect of its passage would be for the benefit of foreign seamen, and seamen on foreign vessels, procured at the instigation of American citizens who assume to represent foreigners.

"Whereas, By the increased cost of operation of ships in the Oriental trade (stated by shipowners to be from \$50,000 to \$100,000 per trip), and the impossibility of obtaining a full crew of Oriental seamen in this port should their crews desert, which this bill forces upon them, it is evident that our foreign shipping, including such American lines as now operate to the Orient, will be driven to the ports of British Columbia, and

"Whereas, The provisions of the bill seek to abrogate our great commercial treaties without notice to foreign nations, and without ordinary diplomatic procedure, and

"Whereas, While we believe the law should require all shipowners to fully provide for the safety of life and property while at sea, we also believe that that safety may be secured by other means than under the arbitrary and unjust provisions of this bill;

"Therefore, Be it resolved by the New Seattle Chamber of Commerce, that we are opposed to the passage of this bill by the United States Senate until its provisions be so altered that American shipowners and operators shall still be able to have control of their ships, and foreign shipowners and operators shall be allowed to carry out contracts perfectly legal in their own country, but made illegal in this country by this bill;

"Be it further resolved, That we hereby request Senators Jones and Poindexter to use every effort to amend the bill before its passage by the United States Senate so as to remove the objectionable features mentioned, and

"Be it further resolved, That a copy of these resolutions, and of our objections, be sent to Senators Jones and Poindexter, the members of the Senate Committee on Commerce, the United States senators from Oregon, California, Idaho, Nevada and Montana, the president of the United States, and the president of the United States Senate."

Steven B. Ayres, member of the House of Representatives, writes:

"Answering your letter of December 19th, permit me to say that it would seem hardly wise for me to express an opinion about the Seamen's Bill just at the present time while it is under consideration in the Senate. With that part of the Seamen's Bill which has for its purpose the elevation of the character of the seamen and the conditions surrounding them I am heartly in accord. But on the contrary, it hardly seems wise at the present time to enact any laws which would tend to increase the cost of operating merchant vessels of the United States. What we are all trying to do is to reduce the cost of building and the cost of operation so that we may more nearly meet foreign competition."

Senator Wesley L. Jones has written as follows:

"I have been considering the Seamen's Bill and, while there are a great many things in it I think should be enacted into law, probably some of the propositions submitted should be changed. I am awaiting the report of the committee, which has had hearings and has given the matter very careful consideration."

REGISTER TONNAGE AND STEAMSHIP EFFICIENCY FOR TRADING THROUGH THE PANAMA CANAL

By JOS. B. OLDHAM, M. A.

Possibly the Panama Canal, or the Panama Canal tolls controversy, may awaken a zealous interest in our foreign going shipping. For sixty-five years it would seem as if most of our commercial thought, and a great part of our energy, has been expended on inland commerce and trade. The very antithesis of such apathy pervades our competitors in matters pertaining to foreign shipping. Something should be done to reawaken, or revive, the esprit de corps of 50-56 when the most powerful swift and efficient ships of the oceans and seas carried the Stars and Stripes in their peaks.

British shipping protection and advancement demands more of the thought and energy of the Board of Trade probably than all of the other elements of trade and commerce combined. This British government department is presided over by a president, who is one of the most influential and active members of the cabinet. This fact should make it clear that maritime affairs receive the most weighty and continuous attention from the British people and their government. The brave and intelligent struggle they have maintained for three or four centuries has now given that nation more than half the maritime commerce of the world. This they have monopolized, except for the few years between 1850 and 1857, when American vessels took the precedent by virtue of higher speed, greater safety, and more efficient management. Our foreign shipping had then reached its zenith and we had a greater aggregate tonnage than the British, viz., 5,212,000 tons, as against 4,332,085 tons owned by the British Empire. But our supremacy was not of long duration, thanks to unfair discrimination against our splendid packet ships, such as the "Sovereign of the Seas," "Great Republic,"

"Young America" and other powerful ships of great beam and prodigious sail area, by foreign underwriters. Moreover, about that date, our available supply of wood was diminishing and the British supply of iron was just as rapidly increasing. In addition, the compound engine, coupled with Hall's surface condenser, was then about ready for adoption; these adjuncts almost gave the death blow to the construction of our wooden vessels for the foreign trade, and with the outbreak of the Civil war, our splendid tea ships, the pride of the China seas, and our equally fine North Atlantic packet ships, were almost instantly thrown out of commission, or destroyed by steam cruisers. Now, our people have not even yet begun to recover from that setback in the foreign trade. We have not given that feature of commerce one tithe of the attention bestowed upon it by foreign maritime nations, hence the inefficiency of many of our foreign going steamers. If space permitted of my describing the highly intelligent and keen interest taken in all elements of economy in ship construction and management, practiced by these shrewd shipbuilders and shipowners of the Tyne and Wear, the reasons for the complete failure of all our efforts to regain our supremacy in the oversea, international commerce of the world, would immediately be apparent. Iron steamers, with compound engines, were being constructed very rapidly on the Wear and Tyne during our Civil war, and in the year 1866, Alfred Holt of Liverpool started three new steamers, the "Achilles," "Ajax" and "Agamemnon," having compound engines, built by Scott & Co., of Greenock, in the China tea trade, and as these steamers, in addition to their tea cargo of 2,500 tons, could carry sufficient coal for an 8,000-mile voyage of 30 days, our best



sailing ships were at once outclassed. As examples of our inefficiency due to inattention, as compared with foreign shipowners. I might cite the irregularity in the application of the "International" tonnage admeasurement act. The American merchant steamer, "Indiana," came out from our shipyards in the year 1872, having a tonnage deduction of 32 per cent. This gave her the least reduction due to propelling power space; and it would seem as if she had no master, no crew, or boatswain's stores, as no deductions were allowed for their accommodations such as a "forecastle, bridge house, house aft, master's accommodation, charts in salon, boatswain's store space," as all such deductions are allowed in foreign vessels, with which, by the way, the "Indiana" was especially designed to compete in the North Atlantic trade. One of her competitors. built about the same time, and of about the same dimensions and power, was the "City of Manchester." steamer was allowed by the British Board of Trade fully 34 per cent deduction of tonnage. But now the American vessel has had her already inadequate deduction of tonnage further reduced by eleven per cent, as this deduction now stands at only 23 per cent. Her net register being

proportionately augmented. But again, before the British steamer "City of Berlin" was purchased by the American government, her gross register was reduced by 46 per cent to compute the net register. Since she came under the control of the U.S. Quarter Master's Department, however, this deduction has been lessened by 6 per cent, as with her new name of "Meade" she is allowed only 40 per cent deduction, with a corresponding increase of net register. These operations, or manipulations, appear to me clear evidence that some one in authority, but certainly not the present commissioner, has been busy during the last forty years in devising a means, or formula, whereby to raise the fiscal number, or register tonnage, of our vessels, probably with a view to increase our tax receipts and port charges, forgetful, or regardless, of the severe handicap he was thus placing on American steamers in competition with the foreigner.

If the 500,000 tons of U. S. shipping engaged in the foreign trade were to have their net register tonnage, "on which government charges and various private charges are based," reduced to conformity with the International tonnage law, their aggregate expenses would be lessened by \$5,000,000 per annum.

"WIRELESS"

AS DISCUSSED BY MR. R. P. SCHWERIN

During the last session of Congress, when a sub-committee of the Committee of Commerce of the United States Senate held a hearing on "Safety of Navigation on Water," Mr. R. P. Schwerin, vice-president and general manager of the Pacific Mail Steamship Company, made the following statement regarding the question of "Wireless":

"I shall be glad to throw some light on this question, as I have been going through some experience with the wireless people. We had a contract with the Massey Company for ten steamers running between San Francisco and the Isthmus of Panama. They installed the apparatus, and we paid them a rental of \$30 a month per steamer, and we supplied the operators. The Massey people went to the wall and sold out to the Marconi Company. The Marconi Company declined to continue the contract, and the contract was of no value to us, because Massey could not keep it up. So I had to cancel the contract with Massey and make a new contract with the Marconi Company. They immediately raised the rental of the machines to \$60 a month per ship, and \$100 when supplying the operators.

"We have on the trans-Pacific line a very large apparatus belonging to the United Wireless, and we have a contract with them for \$100 a month, including the operator and the machines. The United Wireless have sold out to Marconi, and they told me that their contracts, which are subject to a ten days' notice of cancellation, will be changed when Marconi takes over the apparatus, as soon as the legal difficulty between the United Wireless and the Fessenden Company on basic patents is settled. The Marconi have bought the United Wireless; but the judge in charge of that case has declined to allow the United Wireless to transfer the property—it is really a receiver's sale—until the question of basic patents shall have been determined.

"Now, in a discussion with these people in relation to this contract I told them that I had gone into the question of installing our own apparatus on board ship, and I found I could do it for \$1,500. That is the price for each ship. That was based on purchasing the apparatus very much along the line which the navy has done, obtaining the different pieces which you can buy and putting them together, making a complete wireless apparatus which could

be used for a distance of 250 miles. Then our rental would cease, having bought and once paid for a machine.

"I told these people it did not seem to me right that they should get a rental of \$720 a year for an apparatus that only cost them \$1,500, and they said that was not a fair way to look at it; that their loss was in their shore stations; that the United Wireless lost \$30,000 last year on their wireless shore stations; and that we should stand an increased rental on board ship in order to take care of the expenses of the shore stations. I met that proposition by raising the issue in relation to these new hightension stations which the Navy Department proposes to supply. I have suggested to the Navy Department that they divide with the wireless companies the charges for commercial messages. As it now is, in addition to the rental of the apparatus the wireless company gets all the revenue for commercial messages up to a certain sum, and beyond that sum they should have to divide half with the company, but there has never been any revenue on commercial messages that reached 25 per cent of the amount which is specified in the contract

"If the wireless companies were relieved of the expenses of their shore stations, they could afford then to rent the apparatus on board ship for less money and the government would get a certain revenue. For instance, if the United Wireless business were \$50,000 gross, and they divided with the government, the government would have a revenue for is shore stations of \$25,000 a year, and this would help to maintain the government's shore stations.

"Then, again, I should like to see in the bill that all the newspapers and amateurs were prohibited from having wireless stations on shore. On the Pacific coast nearly every newspaper has a wireless station on the top of its building, and they are continually interfering with the work of the ships. Sometimes our operators are up all night, even when within 200 miles of San Francisco, trying to get 20 or 30 messages ashore, on account of this interference. On ten steamers our rental with Massie was \$3,600 a year, but that was increased to \$7,200 a year under the first contract with Marconi. When that company obtains a monopoly of the wireless situation in this country, there will be no limit to the charges."



AIDS TO NAVIGATION

PACIFIC MARINE REVIEW

On or about March 1st, 1913, a light and fog signal will be established on the outer end of the breakwater. San Pedro Harbor. The light, of about 140,000 candle power, will show one white flash every fifteen seconds. The fog signal will be a first-class air siren and sound:

Blast Silent Blast Silent Blast Silent 2 sec. 16 sec. 2 sec. 16 sec. 4 sec. 20 sec.

The Commissioner of Lighthouses reports that on or about May 1st, 1913, a group flashing white light of about 250,000 candle power will be established on the end of Kilauea Point, 216 feet above the water, and will show a double flash every 10 seconds, thus:

> Flash Eclipse Flash **Eclipse** 0.2 sec. 1.2 sec. 0.2 sec. 8.4 sec.

Lat. 22° 13' 55" North; Longitude 159° 24' 25" West. The Safety Car Heating & Lighting Company, with general offices at 2 Rector street, New York, have just received orders for 16 type C spar buoys with mantle lanterns for lighting the Livingstone Channel in the lower Detroit River, Michigan; and also four type C spar buoys with mantle lanterns for lighting the Thimble Shoal Dredged Channel, Virginia.

On October 29th a board was appointed, consisting of two officers of the Engineer Corps of the Army and two lighthouse inspectors, to consider and report upon the most feasible, advantageous, and economical method of providing suitable aids to navigation at or near the extremity of the south jetty at the mouth of the Columbia river, Oregon-Washingon. This board recommended a system of buoys and range lights, and measures have been taken toward this end.

QUESTIONS AND ANSWERS

The replies that are written to the numerous letters of inquiry received by the Hydrographic Office frequently possess an interest for many besides the inquirer himself; and, in order that the labor and research which are required to prepare these letters of reply shall not continue to lie buried in the correspondence files, but may instead become effective in a wider sphere, it is proposed to publish the essential parts of such letters from time to time for the benefit of all who may be interested.

No. 85. Effect of Currents on Engines "Will you kindly answer the following: All All engineers claim that a favorable current causes their engines to run 'freer' than in still waters and vice versa. I never see why it should be, though I will admit the fact. I never could

applies to quiet currents, not eddying, swirling, tidal sets.
"To me it appears as follows: (a) In quiet non-moving water, calm, smooth sea, ship will be fixed in reference to bottom and to the surrounding particles of water. (b) In quiet currents, Japan Stream, for instance, calm, smooth sea, drift 2 knots per hour. I will consider ship will move 2 knots per hour over bottom, but will still be immovable in reference to the surrounding particles of water. (c) If (b) is not true and ship only moves 1½ knots per hour over bottom I can readily see how this other half knot per hour of current would exert pressure on the blades, either aiding the engines to go 'freer' or 'harder' as the current was favorable or adverse."

Answer-In deep water, for instance in the Japan Stream or Gulf Stream, disregarding the effect of the wind, a vessel with her engines stopped will assume a speed and direction over the bottom equal to those of the cur-rent. Under such conditions the force or direction of the current has no effect on the revolutions of the engines. With the exceptions of these ocean currents, however, the effect of current is ordinarily experienced in comparatively shallow water or in confined channels, where there is an effect on the flow of water to the propeller due to the proximity of the bottom or banks which may materially affect the revolutions.

No. 86. Disagreement Between Longitudes Deduced From A. M. and P. M. Observations

"For several days my a. m. and p. m. sights have not 'come in'. I believe there are several reasons that would explain it-different refraction or unusual refraction, error

in dead reckoning, etc., consequently beyond control. The captain claims that it shows that the error of the chronometer is out; that it is not keeping the rate I am giving it, but has a greater or less error. Personally, I can not figure out how that would affect the sights, as I consider it would affect both similarly and give results the same for both a. m. and p. m., though both might be incorrect; in fact, would be if chronometer was not correct."

Answer-The disagreement which you have experienced between the longitudes deduced from a. m. and p. m. observations is not generally traceable to the chronometer but to errors in the altitudes introduced by measuring them from a horizon line elevated above or depressed below its true plane through the influence of refraction, or to the use of an erroneous value of the latitude in working out the sights.

NEW CONSTRUCTION DURING YEAR 1912 AT THE YARDS OF THE SEATTLE CONSTRUCTION AND DRY DOCK CO.

During the year 1912 there were launched and delivered to owners by the Seattle Construction and Dry Dock Company seven commercial vessels, two submarines for the United States government, a large Caisson for the United States government, and there was also constructed for the use of this company a mammoth floating dry dock.

The commercial vessels built during the year consisted of three steel steam whalers built for the United States Whaling Company, known as vessels "Star I," "Star II" and "Star III." "Star I" is equipped with three cylinder triple expansion engines with 600 I. H. P., 196 gross tonnage, and is used for whale hunting in the Alaskan waters. "Star II" and "Star III" are similar vessels equipped with three cylinder triple expansion engines with 440 I. H. P., and are used by the same company for whale hunting.

Two steel whalers were built and delivered to the Canadian North Pacific Fisheries Company and are registered under the names of "Aberdeen" and "Westport" and are successfully used in whale hunting in the North Pa-

The steamer "Sol Duc" of the Inland Navigation Company was launched and delivered during the year. This is one of the larger passenger vessels operated by the Inland Navigation Company, is of 1085 gross tonnage, 1500 I. H. P., and is equipped with three cylinder triple expansion engines designed and built by the Seattle Construction and Dry Dock Company.

The steamer "Potlatch" was launched and delivered to the Inland Navigation Company during the celebration of the Golden Potlatch and in the construction of this vessel a record was established for rapid steamship construction on the Pacific Coast, the keel being laid and vessel delivered in about 42 days.

There was also delivered to the United States government a large steel caisson for use at the new dry dock at the Puget Sound Navy Yard.

The new floating dry dock built for the company's own use is capable of a lift of 12,000 tons and this dock will be ready for operation by the latter part of the month of January. This increased docking facility will give ample capacity for taking care of the anticipated increase in demands for docking which is expected with the opening of the Panama Canal.

The prospects for the present year are very promising. We have under construction at the present time one fast passenger vessel, a cargo steamer, a steam yacht, ocean going, a tugboat, a mammoth dredge for the United States government, two submarines for the United States government, and two submarines for the Chilean government.

During 1912 a number of improvements were completed at this yard, making it one of the most up-to-date and complete plants on the Pacific Coast.



NAVY DEPARTMENT, BUREAU OF CONSTRUCTION AND REPAIR, December 10, 1912.

Vessels under construction, United States Navy. BATTLESHIPS

BATTLESHIPS		
Pct. of Co	mpletio	n
	1, 1912.–	
Number and Name of Vessel. Contractor. Total	Pct. or	
Name of Vessel. Contractor. Total	. Ship	
34—"New York," New York Navy Yard65. 35—"Texas," Newport News S. B. Co80.	7 61.0	
36—"Nevada," Fore River S. B. Co12.3	78.5	_
37—"Oklahoma," New York S. B. Co12.3	3.0	-
	4.9	,
TORPEDO BOAT DESTROYERS		
39—"Henley," Fore River S. B. Co	99.3	}
43—"Cassin," Bath Iron Works	64.5	
44- Cummings, Bath Iron Works	560	
45—"Downes," New York S. B. Co	26.4	
46—"Duncan," Fore River S. B. Co		
47—"Aylwin," Wm. Cramp & Sons74.7	73.1	
48—"Parker," Wm. Cramp & Sons	61.5	
Hennam, Wm. Cramp & Sons	60.0	
50—"Balch," Wm. Cramp & Sons	67.1	
SUBMARINE TORPEDO BOATS		
23-F-4, Electric Boat Co. (Seattle)94.6	94.6	
26-G-4, American Laurenti Co. (Phila.)88.3	87.4	
27-G-2, Lake T. B. Co. (Bridgeport)86.0	85.9	
28-H-1, Electric Boat Co. (San Francisco)86.0	85.3	
29—H-2, Electric Boat Co. (San Francisco)85.8	85.1	
30—H-3, Electric Boat Co. (Seattle)83.3	80.3	
31—G-3, Lake T. B. Co. (Bridgeport)60.5	57.0	
32—K-1, Electric Boat Co. (Quincy)58.0	53.5	
33-K-2, Electric Boat Co. (Quincy)	53. 4	
34—K-3, Electric Boat Co. (San Francisco)62.2	60.9	
35—K-4, Electric Boat Co. (Seattle)	51.9	
37—K-6, Electric Boat Co. (Quincy)42.8	37.6	
38—K-7, Electric Boat Co. (San Francisco)47.6	37.5	
39—K-8, Electric Boat Co. (San Francisco)47.5	46.2	1
	45.7	8
SUBMARINE TENDERS		
1-"Niagara," New London S. & E. B. Co.		
(Quincy) 4.3	• • • •	f
COLLIERS		Į
9-"Proteus," Newport News S. B. Co74.8	67.5	1
10—"Nereus," Newport News S. B. Co64.1	56.7	а
10—"Nereus," Newport News S. B. Co	73.3	ti
3—"Jupiter," Mare Island Navy Yard87.9	86.6	-
GUN BOAT		n
19—"Sacramento," Wm. Cramp & Sons00.0	00.0	p
RIVER GUN BOATS	30.0	a
"Monocacy," Mare Island Navy Yard 1.2	1.0	
"Palos," Mare Island Navy Yard 1.2 "Palos," Mare Island Navy Yard 1.2	1.2	he
	1.2	
Work is advancing rapidly at the Oakland shipyare	นตบเ	th

Messrs. Moore & Scott on the new ferry boat "Edward T. Jeffrey," building for the Western Pacific Company.

This boat is to be double ended, steel, with vertical, double fore and aft compound engines; two high-pressure cylinders 20" diameter; two low-pressure cylinders, 42" diameter, 28" common stroke; the vessel to measure 230'. length over all; 62' 6" beam over guard; 42' beam moulded; 19' 6" depth moulded.

The "Edward T. Jeffrey" wil operate, when completed about June 1st, 1913, as a passenger steamer between San Francisco and the Western Pacific Railway depot at Oak-

The boilers will be of the Babcock & Wilcox type, for a working pressure of 160 pounds per square inch.

The boilers will be operated with fuel oil by the Moore & Scott high-pressure mechanical oil system.

Hough's System of Ship Construction

For the Economical Handling of Lumber, Steel Material and Other Like Cargo

Por Particulars Write

EDWARD S. HOUGH, Consulting Engineer 16 California Street San Prancisco, Calif.

ANNUAL REPORT OF LIGHTHOUSE SERVICE

The annual report of the Commissioner of Lighthouses to the Secretary of Commerce and Labor for the fiscal year ended June 30, 1912, has been published.

During the fiscal year 1912 the reorganization of the lighthouse service under the provisions of the act of Congress approved June 17, 1910, was practically completed. All of the lighthouse districts, with the exception of the three river districts, are now in charge of civilian inspectors, who have been appointed under civil service rules, by promotion of men in the lighthouse service or other branches of the government having similar work, with an average length of previous service of about 16 years. The desirable qualifications for a lighthouse inspector include a knowledge of nautical affairs, training in engineering as required in connection with the construction and repair of lighthouse works, vessels, and machinery, business experience, and ability to judge and handle men.

The United States Lighthouse Service maintains aids to navigation on all coasts under the jurisdiction of the United States, except the Philippine Islands and Panama, and also on the principal interior rivers. This service is charged with the maintenance of aids to navigation along 46,828 statute miles of coast line and river channel.

During the fiscal year there was a net increase of 582 in the number of aids to navigation maintained, the total at the end of the year being 12,824. Of these, 4,516 are lights of all classes and 553 are fog signals. The total number of aids in Alaska, including lights, fog signals, buoys and daymarks in commission at the close of the fiscal year, was 265. There are now 95 lights in Alaska, as compared with 37 lights on June 30, 1910.

Improvements in aids to navigation have been made as follows: Flashing or occulting lights were installed in place of fixed lights at 35 stations; incandescent oil-vapor lamps were substituted for oil-wick lamps at 39 stations: acetylene lights were substituted for oil lights at 44 stations. Service tests have been made of an automatic submarine bell buoy, operated by the sea. Various other improvements in the details of light and fog signal apparatus and other equipment have been made.

The appropriations for the maintenance of the Lighthouse Service for the fiscal year 1913 are \$5,037,410, being the same as for the preceding fiscal year. In addition, there are appropriations of \$526,500 for special works, including light vessels and the completion of urgent works.

During the fiscal year 46 tenders and 65 light vessels were in commission. Plans are under way for the construction of light vessels No. 98, No. 99, No. 100 and No. 101, and also for the construction of four new tenders.

Various details of administration were revised and important economies were effected in the distribution of oil and in the purchase of coal.

Estimates for Special Works

The estimates submitted to Congress for the Lighthouse Service this year include the following items for special work on the Pacific Coast:

Lighthouse tender, general service		
Pearl Harbor, Hawaii, aids to navigation	. 80,000	
Cape St. Elias, Alaska, light station	. 115,000	
Puget Sound, Wash., aids to navigation	30,000	
Point Vincente, Cal., light station	75,000	
Alaska, aids to navigation	40,000	
Alaska, lighthouse depot	40,000 -	
Point Pinos, Cal., light station		
Kauhola Point, Hawaii, light station		
Kellett Bluff, Wash., light station	40,000	
Coquille River, Oregon, aids to navigation	4,000	
Warrior Rock, Oregon, light station	2,000	
Goat Island, Cal., lighthouse depot	40,000	

HARBOR-DOCK AND TERMINAL IMPROVEMENTS

TACOMA TO BE NORTHERN TERMINAL OF NEW LINE OF STEAMERS

Mr. M. Ford, of W. R. Grace & Co., in a letter addressed to the Tacoma Commercial Club and Chamber of Commerce, states that this company "is particularly interested in Tacoma, as this is the northern terminal of our North Pacific Line, operated between Puget Sound and San Francisco and the west coast of South America.

"As you are no doubt aware, we are also building at Philadelphia American steamers for operation through the Panama Canal between Puget Sound ports and San Francisco and Atlantic Coast ports, and Tacoma will probably also be the northern terminal of this line.

"The company will be operated under the name of the Atlantic & Pacific Steamship Co. The first steamer of the line—S. S. 'Santa Cruz'—was launched in November, and is expected to sail from Philadelphia and New York via Magellan, during February, with a general cargo for San Francisco and Puget Sound ports.

"The following steamers, S. S. 'Santa Clara,' S. S. 'Santa Catalina' and S. S. 'Santa Cecelia' will be ready for operation as soon as the Canal is opened."

W. R. Grace & Company are at present booking freight for the S. S. "Santa Cruz," to be loaded at Philadelphia and New York for Puget Sound ports.

PROGRESS AT PORT OF VICTORIA, B. C.

The principal item of interest at this Port within the past thirty days is the agreement arrived at between the Provincial Government and Canadian Pacific and Northern Pacific Railway Company's four terminals on the late Songhees Indian Reserve, situated practically in the center of the city. The plans provide for about seventy acres of trackage, etc., and in addition there will be a common-user roadway and trackage along the waterfront between the terminals and the water. The plan also provides for common-user wharves.

We are informed by the city representative in the Federal Parliament, through the Victoria, B. C., Board of Trade, of the intention of the Government of Canada to include in the estimates about to be brought down a large sum to provide for the immediate construction of wharf accommodation at Victoria's outer harbor in addition to the breakwater, particulars of which we have already announced. It is also intended to remove by contract, variously estimated to the value of three to four hundred thousand dollars, rock in the inner harbor just in front of the proposed passenger wharf.

NEW SERVICE OF HAMBURG-AMERIKA LINE

The following information regarding the new service of this company was recently sent us from Hamburg, over the signature of Mr. H. Balluder:

"We will inaugurate a monthly sailing in January from here via China and Japan to Vancouver and Portland, the steamers to return in the same manner to Europe. If sufficient inducement offers, we may also call at different South ports, but nothing can be decided in this connection at the moment. We must first wait and see what support we get for this new line before we can fix a definite itinerary.

"This is all I can say about this new venture for the time being."

The S. S. "Arna" has been chartered to load at New York about February 1st with a cargo of steel rails, etc., consigned to Messrs. Evan-Coleman & Evans, Ltd., of Vancouver, B. C.

PROPOSED CONSTRUCTION OF PIERS IN NEW YORK HARBOR

Regarding the agitation to construct piers at New York to be 1,000 feet in length, we are advised that this situation is substantially as follows:

The War Department having refused permission to continue the temporary extension of piers in the Chelsea district now used for the accommodation of the largest ships, it became necessary for the city to adopt a continuing policy for the future with a view to making permanent provision for ships of this class. The end sought could be reached in two manners. One by extending and straightening the pier-head line between 30th street and the Battery, which will permit the construction of several piers of 1,100 feet length or thereabouts, and a number of others between 800 and 1,100 feet, without etending the slips inshore.

This, however, will involve the assent of the Secretary of War whose engineers have hitherto not viewed any encroachment upon the fairway of the river with favor. The river at this point, however, is of ample width. The project indicated is simply the straightening of the line between the two points of the present greatest projection. This plan has been approved by the city authorities and is to be urged upon the War Department.

The second project is the construction of eight piers of at least 1,000 feet length, and probably 1,200 feet, between Forty-fourth street and Fifty-sixth street on the Manhattan waterfront of the Hudson River. This site has likewise been formally adopted by the Board of Estimate and Apportionment, and tentative plans for the development have been prepared, but no step has yet been taken toward actual construction. To build piers of the length named at this point will require that the slips be excavated inshore from 200 to 400 feet. This excavation will be almost wholly through rock, and north of Fiftieth street, in order to provide for a depth of 40 feet a rock section 300 feet in width by 85 feet vertically must be removed for a distance of from 200 to 400 feet. In addition a considerable tract of expensive land must be acquired at a cost of many million dollars.

Rough estimates of the cost of this improvement as a whole indicate an expense of from thirty-two to forty million dollars, according to the number of piers to be built.

It is not the intention of the City to proceed at once with the entire improvement, but it is probable that two or more of the piers at the south end of the area where construction is less difficult will very soon be authorized.

In addition to the pier improvements described above, the City will immediately adopt plans for a terminal railroad along the entire Brooklyn waterfront between Brooklyn Bridge and Bay Ridge, a distance of several miles. In connection with this it is practically certain that the development of the large extent of waterfront property owned by the City at South Brooklyn will rapidly proceed. Two piers have already been constructed by the City at this point, one of them being 1,600 feet in length, and it is probable that the others, plans for which have not yet been drawn, will likewise be made sufficiently large to accommodate modern ships of the largest size. This development, however, has not yet been crystalized, but is certain to follow as a logical result of the construction of the terminal railroad which has practically been determined upon.



SHIPPING FACILITIES AT THE PORT OF CORONEL

We are indebted to La Compania de Arauco, Ltd., for the following extensive report regarding the Port of Coronel:

"The chief movement in Coronel is the bunkering of steamers. There is also some movement in the shipment of bran, flour, etc., to steamers for conveyance to Europe and the Northern Pacific ports.

The following table will give an idea as to the quantity of coal handled:

Coal Shipped From

Tons	Tons
1911	1910
Coronel335,000	267,000
Lota	166,000
Lebu 50,500	47,500
Total591,500	480,500

Coal Dispatched By Railway 1911 191

373,200 tons 352,800 tons
The total coal production including that used for consumption, of all the coaling companies, was as follows:

1911 1910 1,158,600 tons 999,918 tons showing an improvement in 1911 of 158,742 tons.

As regards the bunkering of steamers, there are in all in Coronel, four coaling companies, viz.: The Schwager Co., the Sucesion Rojas, the Coronel and Lota Co., the Arauco Co., Ltd.

In Lota there is only the Coronel and Lota Co., and in Lebu: "Errazuriz" Coaling Co., "Boca Lebu" Coaling Co., "Victoria" Coaling Co.

As regards the dispatch of steamers bunkering, we must confine our information to the Arauco Co.

The coal is brought down from our own collieries by our own railway. As a rule there is no reason why a steamer should be delayed. The total tonnage that can be shipped in one day depends on the time of the year and the facilities that the steamers may have for coaling, some steamers being very badly off for gear to suit local coaling methods, whilst others are well found. Coaling arrangements here are: Lighters of 20 tons capacity go alongside ships and coal is placed in 1-ton canvas slings and hauled up by ship's derricks worked by steam winches on board.

Under good conditions we have this year put on board between two steamers in one day over 900 tons of 1,016 kilos, but a good average day's work would be 600 tons.

The following are some instances of steamers coaling with us:

Steamer	Tons	Arrived	Sailed
"Orange Branch"	493	Jan. 25	Jan. 25
"California"	455	Feb. 4	Feb. 5
"Ganelon"	834	March 6	March 7
"Bogota"	595	\dots April $2\dots$	April 3
"Quillota"	347	May 10	May 10
"Chiloe"	4/1	June 10	June II
"Quilpue" "Burgemeister Hach	, , , , , , , 598 m'n'' 666	Aug 1	Aug 2
"Anglo Patagonian"	500	Sent 17	Sent 17
Willow Branch".	673	. Oct 22	Oct 23
"Olivant"	311	Nov. 15	Nov. 15

These are a few examples of steamers which have received an average dispatch from this company this year. With regard to those steamers which have arrived one day and left the next, it must be taken into account that in many cases steamers arrived in the afternoon of one day and left in the morning of the following day.

As regards delays to steamers, we may quote you two or three of the worst cases:

Steamer	Tons	Arriv	ed	Sail	ed
"Amasis"	.1,204	April	6	April	12
ine Branch.	700	Anril	×	Anril	14
"Holmwood"	301	Sept.	18	Sept.	26

The delay in the first two cases was due to the fact that these steamers arrived in Easter week, and other steamers having cleared us out of our stocks of coal, and the miners refusing to work through all the week, we could not get the vessels away. The same remarks apply to the two latter steamers, which arrived here during the celebration of the Independence, i. e., 18th, 19th and 20th, when our miners, as in the first two instances, did not work for a week. One of the worst evils that the colliery companies here have to contend with is the great intemperance of the miners, especially when they are paid, which occurs about every two months, when the mines remain idle each time for an average of seven days.

As regards the shipping of flour per day, this, of course, varies according to the equipment of the steamer and the notice given us, but a good average may be taken as 100 tons per day.

With reference to the discharge of cargo, this company is only interested in the discharge of stores, machinery, etc., for the mines and railway, and no fixed average quantity can be given, as it wholly depends on the class of cargo, and the way the ship can work same. In the case of the "Inca" lately, for instance, it took us two days to discharge about 100 tons of machinery, etc., in which were included two locomotives and two railway carriages.

Coronel Port

The following is a description of the port, with particulars as to the shipping and coaling facilities, and details of the charges incurred by steamers coaling there:

Coronel is situated about six miles north of Lota, and about 40 miles south of Talcahuano. The bay is open, and being well protected from the north, is available at all times. The anchorage is good ahead of mooring buoys, the depth of water there being about seven fathoms.

There are no facilities for dry docking nearer than Talcahuano, but urgent repairs can be done in the workshops belonging to the Arauco railway.

Provisions are easily obtainable, and at cheaper rates than in more Northern ports. Fresh vegetables of nearly every description can be bought with facility.

Pilotage is not compulsory, but should this be desired, the usual charge for bringing steamers in and mooring up to buoy would be about \$50, paper.

There is an abundant supply of fresh water of good quality, which is delivered to vessels by special water boats. The minimum charge for any quantity up to 17 tons is £1 15s, and from this quantity upwards, the charge would be 2s 6s per ton.

Coaling

This is done from piers, the trucks being emptied by chutes into the lighters, which have an average capacity of about 20 tons each. The lighters are towed out to the steamers by steam tugs, the coal being shipped on board by canvas slings, each sling holding about one ton of coal. In order to get a quick dispatch, it is most essential that the steamers be equipped with good derricks, one at an easy distance from each part of the ship where the coal is taken in. The derricks should be arranged to swing well out clear of the side of the ship, as with short booms, when the slings are hauled up, they are apt to knock against the side of the steamer, thus causing the coal to be lost by falling between the ship's side and the coal lighter, through part of the sling's contents being jerked out.

From 400 to 800 tons can be shipped in one day and in summer even up to 900 tons can be embarked. Coaling is only done between sunrise and sunset, no work being done after dark. The extra charge for bunkering on Sundays or other non-working days works out to about 6d extra per



ton. The charge for trimming on usual occasions is 6d per ton, and steamers can be coaled in quarantine without any extra charge.

Charges

Steamers calling for bunkers only, pay the equivalent of 17s in accordance with the current rate of exchange.

Steamers calling to load or discharge general cargo would pay port charges equivalent to £2. In addition to this, a payment of 10 cents Chilian gold per registered ton has to be paid, and also a further 10 cents Chilian gold per registered ton, for hospital and light dues, respectively. (The Chilian gold dollar is worth 18d.) These charges apply to steamers calling to discharge full or part cargo of any description, or to land or embark passengers, or to load cargo. The hospital and light dues are only paid once every twelve months. Should the steamer call again within the same period she would be exempt from these charges, both in this or any other Chilian port.

The usual agency fee for attending to ship's business is £2.2s

General Agency

Lighter hire and landing general cargo would be 4s 6d per ton of 1,000 kilos. Commission on fares and freights 5 per cent, or a minimum agency fee of £5."

NO COALING STATION AT HONOLULU FOR THE T. K. K.

The Toyo Kisen Kaisha is not to establish a coaling station at Honolulu. The Daily Press has on several occasions dwelt at some length to the contrary and also as to the advantage that Japan would derive from this move by the Toyo Kisen Kaisha.

Mr. W. A. Avery, Assistant General Manager for this company, at San Francisco, is quite emphatic in his denial, which we publish herewith:

"Referring further to your letter of November 25th, and following our reply of December 2nd, we now beg to advise that since the letter in question was written one of the directors of this company, whom we have been expecting, has arrived in San Francisco and your letter has been brought to his attention. He advises that there is absolutely no truth whatsoever in the report; and we wish to further say that this company is not contemplating at the present time—or in the future—establishing a coaling station at Honolulu, nor has such a proposition been even under consideration."

THE BUSINESS AND FINANCIAL OUTLOOK

In passing from the old to the new year, we can afford to stop a moment just to get our reckonings and to wonder whether we wil be able to steer a true course through 1913. Nineteen Hundred and Twelve brought to the people of these United States peace and prosperity. Larger crops than ever before were harvested; our granaries have been filled to overflowing; the hum of the factory wheel has never ceased; we have quarreled with no one, and we have disposed of a presidential election without seriously hindering commerce. We have made splendid advancement in the work of the Panama canal, the greatest undertaking of recent times; the conservation of our national resources is no longer a theoretical but a practical proposition; labor and capital have, we believe, been brought to a better understanding in many cases, and vast numbers of people from all parts of the world have entered our ports to unite in the process of developing industrious and peaceful citizens.

In the last analysis, we have entered the new year under most auspicious circumstances and with an evident desire to be mutually helpful one to the other.

Although there have been numerous wars during the last quarter of a century which have entailed an infinitely greater loss of life and heavier burdens for the people, the recent Balkan conflict wrought very serious hardships upon the European nations. It has been estimated that nearly half a billion dollars in new loans will have to be floated during the coming year to repair the waste caused by the war, to say nothing of the interference with general trade in the territory contiguous to that of the belligerent notions

Conditions in the United States are very much more favorable than are those encountered at the principal financial centers of Europe, because of the extraordinary complications incident to the Balkan war, and in New York the banks are in a relatively strong position.

With the adjustment of the January dividends and the interest payments, which will exceed \$240,000,000 this year, the tension in the money market has been relieved for the most part. This does not mean, however, that money rates will become immediately easy, for general

trade throughout the country is too active to admit of a quick reaction from the decided firmness which has lately prevailed, but the most difficult money market period of the year has passed with fewer complications than were expected a month ago, before the interior markets began to remit heavily to New York.

The bond market is still stagnant in the sense that it is almost impossible for bankers here or in Europe to place with the public large blocks of bonds at anything like the old 4 per cent basis. In this connection, it is well to remember that the great foreign markets will be taken up for some months in arranging for the new financing made necessary by the waste incident to the Balkan war, but as soon as Europe's buying power is restored there will be renewed foreign buying of American securities on an extensive scale. It may be well to bear in mind, however, that much depends on the time required for the foreign situation to mend and on the absolute elimination from people's minds of the fear of a great European war. Had it not been for the Balkan war there is no doubt that Europe would have sent us from \$40,000,000 to \$50,000,000 of gold in payment of the great exports of merchandise and staples. This is indicated by the wonderful prosperity of our foreign trade as shown by the export figures for November, the total of \$277,900,000 being \$23,000,000 in excess of any previous monthly record. This gave an excess of exports over imports for the month of \$124,700,000a figure also without precedent—and shows that 1912 will in all probability pass into history as the first twelvemonth period on record when agricultural exports reached one billion dollars in value. The indications are also that the international trade balance during 1912 will exceed \$600,000,000.

Anticipated changes in tariff schedules have caused a slight halt in certain lines of business pending more definite information on the subject. This halt has not yet become much of a factor in general trade and there is reason to believe that it will amount to very little in the way of actually retarding business. At the same time, it is natural for manufacturers at such a time to defer their commitments until they have some satisfactory knowledge



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respecting the tariff conditions which will prevail later.

It is fair to assume that the work of revising the tariff will be taken up without delay when the extra session begins work at Washington. There is also reason to believe that the revision will be provided for on lines which will inflict the least hardship to industries which would be affected by a reduction of duties.

The extent to which the Parcels Post system, just introduced in the United States, will affect our methods of doing business will be one of the interesting developments of the year. The tendency, especially on the part of the small store keeper, to buy in limited quantities-what might be called a "hand to mouth" policy—has been making progress slowly but surely. Just what influence the Parcels Post will exert on this phase of the situation will be worthy of careful study.

The business outlook in the United States continues very satisfactory and, barring the slight interruption incident to such hesitation as may be brought about by the consideration of tariff revision, it is fair to expect that trade will keep up in large volume for at least months to come. In fact, many industries have now enough business on their books to insure steady employment for their regular forces during a considerable portion of 1913.

> THE FOURTH NATIONAL BANK Of the City of New York.

HALF YEARLY REPORT OF NIPPON YUSEN KAISHA

The gross profits of the company for the half-year ending September 30th, 1912, amount to yen 4,944,290.743, out of which there has been paid:

Dannastatta			a			Yen
Depreciation	oi	tne	Companys	neet	and	
						490.680
Insurance fun						
Ship's structu	ral r	epair	fund	· · · · · · · ·	591,	842.850

2,141,222.870

leaving a balance of Yen 3,686,012.305, including Yen 882,-944.432 brought forward from the last account.

The directors now propose that Yen 140,153.390 be added to the reserve fund, raising it to Yen 3,448,840.339, Yen 258,579.925 to the reserve for the annual reduction of subsidies, bringing it to Yen 2,544,809.370, and Yen 1,300,000 to the fund for the extension of services and improvement of the fleet, making that amount to a total of Yen 6,300,000; also that Yen 73.555 be allowed as directors' and auditors fees. From the remainder the directors recommend a dividend at the rate of ten per cent per annum, which will

absorb Yen 1,100,000. The balance, Yen 813,723.990, will be carried forward to the next account.

At the 72nd ordinary general meeting of the Peninsular & Oriental Steam Navigation Co., held on Dec. 10th, the directors, after providing for the usual dividend at the rate of 5 per cent per annum on the preferred stock, recommended a dividend on the deferred stock of $6\frac{1}{2}$ per cent for the six months, together with a bonus at the rate of 5 per cent, making the total interim dividend of 3½ per cent paid in May, a total distribution on the deferred stock of 15 per cent for the year.

Messrs. Dodwell & Co. Ltd. announce their removal from offices in the Berlin Building to the fourth floor of the Tacoma Building, corner of Eleventh and A streets, Tacoma, Wash. Messrs. Dodwell & Co. are Pacific Coast agents for the Blue Funnel Line, the Ocean Steamship Company, Ltd., the China Mutual Steam Navigation Co., Ltd., and the Puget Sound, British Columbia Line.

FREIGHTS AND FIXTURES

We publish herewith the general monthly freight report of Messrs. Hind-Rolph & Co., prepared for the readers of the Pacific Marine Review:

"The freight markets for the past month have not shown any very startling features, but the year closed with rates firm, although, as usual, at the end of the year there was no great volume of chartering business done. Rates, however, were well maintained and there seems to be no likelihood of any falling off in the near future. The most interesting fixtures to advise are the following:

"Neotsfield," lumber, Sydney558	
"Dunsire" and "Drummuir," lumber, Sydney57s	6d
"Paul," lumber, Newcastle	9d
"Paul," lumber, Melbourne or Adelaide*70s	
"Paul," lumber, Fremantle74s	
"Battle Abbey," lumber, Newcastle58s	9d
"Puako," lumber, Sydney or Newcastle61s	3d
"Puako," lumber, option direct nitrate port63s	9d
"Puako," lumber, option Callao62s	6d
"Wm. H. Smith," "Eldorado" and "Balboa," lum-	
ber to Valparaiso F. O. Pisagua Range65s	
"Lottie Bennett," lumber to a direct port Chile	
or Peru62s	6d
"Lottie Bennett," lumber, option two ports Peru65s	
"Annie M. Campbell" and "Winslow," lumber two	
ports Peru65s	
"Metropolis," Portland, U. K. cont38s	9d
"Steinbek," Portland, U. K. cont378	9d
*Option	

*Option
Steamers-
"Damara," time charter delivery and redelivery
San Francisco, about seven months 7s
"Verona," time charter, delivery San Francisco,
redelivery Puget, about seven months 6s 10 1/2 d
"Mathilda," time charter, delivery Puget, rede-
livery China 98
"Mathilda," time charter (to follow), delivery
Puget, redelivery Australia 8s 3d
"Terrier," time charter, delivery Puget, redelivery
Australia 8s
"Twickenham," Portland-Japan25s
"Strathlorne," Portland U. K. cont478 6d

NEW APPOINTMENT FOR MR. T. W. C. SPENCER

The Pacific Marine Review takes pleasure in joining Mr. T. W. C. Spencer's numerous friends who have extended their congratulations to him on his appointment as surveyor by the American Bureau of Shipping, Register of American and Foreign Shipping and American Lloyd, for Seattle and the District of Puget Sound.

Mr. Spencer's years of experience, with an unapproachable clean record as chief engineer and assistant superintendent engineer of the Pacific Coast Steamship Company, fully qualifies him for the position which he now occupies and creditably fills with dignity and conscientiousness, qualities for which he is well known by his many well wishers.

While it is only too true that the American Bureau can not measure itself in rulings for the execution of survey and classification of vessels nor in the extension and useful sphere in which the British Lloyds is called upon to render the shipping community at large, a movement is now under way to bring the American Bureau up to the British Lloyds standard. Legislation is at present much concerned with these matters and if successful in the establishment of such a standard, Mr. Spencer's appointment is of much significance.



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THE CALIFORNIA-ATLANTIC S. S. LINE

The failure on Dec. 31st, of Bates & Chesebrough (the California-Atlantic S. S. Line) did not come as a sudden surprise to the shipping community. It has been known for some time that the firm was in financial difficulties, which culminated with the disaster to the S. S. "Pleiades," a chartered steamer, which ran ashore on Cape San Lazaro about three months ago, but which was floated and returned to San Francisco, having been bound for Balboa with a full cargo for the Canal Zone and New York.

The company started business in October, 1910, and was heralded as a powerful rival to the Pacific Mail, and also a saviour to importers, exporters and to the public. Whatever the real cause of the failure may have been, the firm attributes it to the cutting of rates by the Pacific Mail, the failure of the Panama Railroad to handle its shipments with dispatch across the Isthmus, and as a final straw the disaster to the "Pleiades." No doubt all of these were contributing factors, but in addition must be taken the fact that the company operated with chartered steamers, and with the high rates of charter hire now prevailing and the competition of a powerful competitor like the Pacific Mail, which owns its own steamers, freight rates which would attract business were not sufficiently remunerative to make expenses. The company was assured of support by merchants both East and West, notwithstanding what its principal competitor might do, and it had the backing, at first, and the free advertising of the daily press, but notwithstanding all of this it would appear that the almighty dollar counted and exports and imports sought the cheapest method of transportation. That the public reaped any benefit is doubtful. Backing by the press is very well in its way, but it must be supplemented by the backing of sufficient funds, and this backing the California-Atlantic S. S. seemed to lack. While we understand that Messrs. Bates & Chesebrough are sanguine of interesting more capital, yet in view of past experience that seems rather doubtful.

On top of the report of this failure comes the report that the Luckenbach S. S. Co. will operate a line of steamers from San Francisco to Panama, connecting with its own steamers on the Atlantic side. They will start operations with the S. S. "Pleiades," which they own and which was chartered by Bates & Chesebrough. This company has been in the transportation business for 50 years and owns a fleet of steamers plying on the Atlantic. It has ample financial backing and should prove a worthy competitor of even such a company as the Pacific Mail. The company owns and operates twelve large freighters, four on this coast, and should it confine its operations to trade via the Panama Railroad or Panama Canal it would find ample use for all.

ON SAFETY OF NAVIGATION By E. Francke

THE steady and phenomenal progress made in ship construction during the past twenty years has resulted from the energies of the naval architect, the shipbuilder, the engineer and the shipowner. To attain the maximum safety at sea, these men have worked for years and are still working in close alliance with underwriters and such classification bureaus that provide the highest expert advice upon all proposals or suggestions for the improvement of hull or machinery and equipment.

As much as we are concerned with the shaping of laws for safer navigation, the operation of ships under our flag in competition with the world cannot be realized until many other demands on our laws, times and usages have been considerably modified.

"Safety of Navigation on Water" constituted a hearing, commencing on June 6, 1912, before a sub-committee of the Committee on Commerce, United States Senate, Sixty-second Congress, Second Session on S. J. R. 112, S. 6976 and S. 7038, to promote safety of navigation on water, regarding which hearing I have already made comments. However, the cream of this continued and immensely interesting hearing took place on June 13th last.

I have never read and re-read any discussion with more profound interest, more extreme pleasure and keener satisfaction than the statements made on the above date by the Vice-President and General Manager of the Pacific Mail Steamship Company and the San Francisco-Portland Steamship Company, Mr. R. P. Schwerin of San Francisco. It is indeed no small compliment to this coast to have a man so brilliantly equipped to deliver classics on matters of such vital importance for the furtherance and betterment of our Maritime affairs, matters which I do not believe were ever more vividly and satisfactorily brought to a desired focus than on this day.

After nineteen years of training in the United States Navy, from which Mr. Schwerin retired as Lieutenant, he joined the Pacific Mail Steamship Company, in the service of which he rapidly arose to his present high and responsible position, showing remarkable tact and genius, as the operator, under untold odds, of the largest trans-Pacific steamship company under our flag.

There are indeed few steamship managers who in personal experience can combine the knowledge of sailor, navigator and operator, as well as designer of steamships. His own statement before this Committee, which narrative partially reproduced follows this article, amply confirms that he is in full possession of these attainments. Such many sided qualities of indisputable and immeasurable advantage in this sphere are of a value which cannot be too highly estimated. I have had the pleasure of meeting Mr. Schwerin but thrice in years past; once in New York, then in Seattle and later in Yokohama; on two of these occasions on board of large new vessels, just from the builder's hand, on board of which I happened to serve. opportunity I became strongly impressed not only with his keen sense of observance of every minute detail pertaining to the construction of the ships in question and their improved arrangements on and below the decks, but with the tremendous amount of accumulated knowledge always at his command.

Intensely interesting in his conversation, alert and energetic in his actions and earnest in his convictions are some of Mr. Schwerin's qualities, bespeaking of extraordinary genius for administrative purposes, but my admiration for the man, martinet as he is, is the absolute fairness with which he has treated on this occasion the many different and vital subjects which so intrinsically concern the American Merchant Marine at large. It is sincerely to be hoped that good use will be made of the



educational and effective manifestations of Mr. Schwerin before this Committee, which eventually will make its remedial recommendation for just legislation on matters pertaining to vessels under our Flag, principally employed in over-sea commerce, the expansion of which every patriotic American has at heart.

That Mr. Schwerin's capacity and qualities must have become apparent to all present is beyond the question of a doubt and I trust that all legislators thus concerned are thoroughly convinced of the benefit that may be derived by the nation at large from obtaining the services of a man of such caliber, such demonstrative ability and known experience in the conduct and government of merchant marine affairs.

In every important business undertaking, other than that of the Government, men of training and known capacity are selected for executive places, to which no one could possibly aspire without perfect training in each particular sphere acquiring such demonstrative ability to prove the fitness of the real genius for executive management.

Why should not this rule equally well apply to governmental affairs when it so necessarily and justly applies in private and corporate affairs? Who would not rejoice in and coincide with the views Mr. Schwerin has taken on the different issues of which many, if not all, must appeal to every conscientious steamship owner and manager?

His statement on ship construction is so clear, concise and convincing that even a layman could not help but obtain at least a faint idea of this eminent and difficult problem. His suggestions for the adoption of a metallic lifeboat, the specification of which every builder would have to absolutely comply with, is the only solution to the menace with which for years past we have to no small disadvantage been confronted. The same refers to life rafts and life belts, but let heaven forbid the lawmaker from passing such condition into law, in order that we may be at liberty to progress with the times and improve these life-saving appliances as ever changing conditions and times warrant.

There is no doubt that if our mercantile marine is to prosper, it must be left to develop, free from the cramping influence of official control. I delight in Mr. Schwerin's excellent and precise definition of classification and the equipment provided by law and required by law. Particularly appealing to the writer is this gentleman's fairness to Lloyds Register and Bureau of Classification of British and Foreign Shipping, in which he has absolute faith and which he respects as the Bureau "par excellence."

With all due respect to other existing Bureaus for the survey and registry of shipping, there is in the writer's opinion no bureau better equipped with knowledge and authority on the many problems which continually confront the naval architect and the marine engineer. Its board, having fully proven its progressiveness, is comprised of the most widely known and experienced shipbuilders, naval architects, engineers, steelmakers and forgemasters of Great Britain. The ever-widening sphere of useful service which this society has been called upon to render to the shipping communities at large, both in Great Britain as well as in other countries the world over, is sufficient evidence of the confidence reposed in it. The survey and classification of the huge volume of shipping over which this society wields its sway imposes a great responsibility, and the sound judgment, the admirable impartiality and the dignity with which it discharges this responsibility is shown by the high esteem in which this society's classification is held. Who would not like to see an American Lloyd created on such dignified principles, which creation would naturally require both capital and deep study, constituted of our best and most prominent

men, men of the same capacity, thorough training and ability as Lloyds has on its Committee; men of which the United States is not lacking by any means!

Lloyd's Register is to some extent an adjunct to the British Board of Trade-they work in harmony with the Board of Trade, especially in regards to freeboard-rulings which we so far have considered unnecessary, although we now seriously have commenced legislating on "Safety of Navigation on Water," under which heading the Freeboard Rule should not be missing as it unfortunately is now. Let us establish an American standard of shipconstruction, a bureau of classification that would be recognized throughout the world, with its rulings well defined, serviceable, practicable, fair and useful from all and every aspect, but can we, or for that matter, can any other nation improve on the rules in vogue at Lloyds and to better advantage protect the legal and moral rights of all concerned? Can we-can any other nation? However, such Bureau should, in the writer's opinion, not be under Government control, for reasons explained above, although competent, unprejudiced and capable government officials could, in a limited number, be appointed to serve on the Board with no more power of jurisdiction granted them than any other member of the Board would have, a Board consisting of experts of all the different professions essential in the shipbuilding industry, including the steamship operator.

Relative to the radio aspect of our law, Mr. Schwerin has said all that could be said, and the examples he has chosen are indeed convincing and should be duly heeded. The use of searchlights and binoculars were discussed in previous issues of this publication, and it is gratifying to know that Mr. Schwerin fully coincides with the views the writer has taken on this subject. It is on this particular question, however, where this gentleman's essence of seamanship is so vividly proven, when he states: "If I was officer of the deck (speaking of a sailing ship) and a fellow flashed that for me, I would want to kill him," and continuing he said: "I can see with my eyes, I never required a pair of glasses to find the object."

I am wondering how often our shipmasters felt as Mr. Schwerin so justly and vigorously expressed himself, when rounding Point Wilson with their vessels and the searchlights of our Forts Worden, Casey and Flagler flashed their blinding glares in all directions, obscuring through this reckless practice the less powerful aids to navigation, which exercise is truly an unpardonable menace to navigation in dark nights.

I loath to again touch on the "Titanic" disaster, but among the evincing testimony and the many instances Mr. Schwerin has found essential to refer to, his absolute fairness, his faculty of sound judgment and reasoning power manifests itself to the best advantage in his views as to the cause of this deplorable case, which views must appeal to every fair-minded reader: "It is due to the personal equation of the captain of that ship," and further on he remarks: "You cannot provide against each and every exigency in this matter of saving life at sea." How true such statements ring home!

Mr. Herbert L. Satterlee, an associated member of the Society of Naval Architects and Marine Engineers, in his "An April Crossing," published last June, sagely said: "The human brain can not compute the combination of circumstances or unusual or extraordinary conditions that may occur to the great ocean. Man may avoid many dangers, he can multiply the means of safety and methods of rescue, but he can not annihilate the 'peril of the sea'!"

The highly esteemed Mr. Stevenson Taylor, who, as the retiring president of the Society of Naval Architects and Marine Engineers, quoted the above mentioned and well judged words in his remarkable address made before this



society on this occasion, stating, "You have perhaps attributed the disaster to a combination of circumstances never happening before (that particular combination may never occur again) in which combination occurs human judgment, upon which in all walks of life, in all spheres of action, so much depends. True, we cannot annihilate the peril of the sea, and we must depend in a crisis on human judgment. There remains for men of our profession all the greater responsibility to make our work safe, to at least approach the desired absolute safety, safety in spite of the possible fallibility of the human judgment which cannot be and should not be entirely eliminated."

Truth is not the agreement of knowledge with an object beyond itself, but the agreement of our judgments with the objects of our knowledge. The character of truth is its capability of enduring the test of universal experience, and coming unchanged out of every possible form of fair discussion.

STATEMENT OF MR. R. P. SCHWERIN, VICE PRESI-DENT AND GENERAL MANAGER PACIFIC MAIL STEAMSHIP CO. AND SAN FRANCISCO AND PORT-LAND STEAMSHIP CO. BEFORE THE SUB-COMMIT-TEE ON COMMERCE, UNITED STATES SENATE, WASHINGTON, D. C.

"Mr. Chairman and Senators, I would like to call attention to some of the questions that have presented themselves to my mind with respect to Senate bill 6976. The first portion of that bill relating to the filing with the proper officer of the United States government a statement of capitalization, etc., I think is eminently proper for all foreign shipping corporations transacting business in this country. We have to do it for American ships transacting exactly the same character of business in a foreign coun-We have to file statements of incorporation and capitalization very much upon the same lines that are provided for in this bill. I do not see that there could be any possible objection to it. Furthermore, I do not see what possible objection there could be to any foreign ship being subjected to exactly the same inspection laws as our own tonnage. As an illustration of that, I would cite that when the French line was operating on the Pacific, carrying passengers from Japan to Honolulu, they always broke down all their passenger accommodations and cleared them away before reaching the harbor so that there was no possible chance to inspect the cubic measurements; whereas the American ship had to go in there and be subjected to the rigid inspection of the United States custom laws, and it seems to me that what is good for an American ship in an American port ought, correspondingly, to be good for a foreign ship operating in and out of our ports.

I think there has been a misapprehension on the part of some gentlemen who appeared before you, that these parit, they applied solely to foreign ships. As I understand they applied solely to foreign ships. We filed today before the Commissioner of Corporations our return of earnings and expenses, which cover all the points which are set forth in this bill.

We are subjected to examination by the Japanese immigration inspectors for steamboat inspection in Japan, and we have to comply with the Japanese inspection laws, and we pay a fee for their inspection of the ship.

There is no reason why our government should not charge a fee for inspection of a foreign ship. I do not think that any foreign shipowner would object to it. It is done in other countries. We have simply allowed the foreign shipowner to come here and do pretty much as he pleases.

Senator Smith. Admiral Watt suggests that it would be desirable for us to know whether that fee should be a lump sum or whether it ought to be based on the passenger capacity of the ship.

Mr. Schwerin. I should consider that the best way to get at that would be a lump sum for a ship of a certain size, and under and above that, so much per registered net tonnage additional. That would give a lump sum for a reasonable-sized ship, and then for the additional amount of work which was required to inspect a very large ship—the larger number of inspectors required—the charge would be collected accordingly. I do not suppose the idea is to make the charge prohibitive. A charge simply carries dignity with the inspection.

It makes it official if there is a charge. I, as a steamship operator, would like very much to have my remarks on section 5 considered only in the light of a desire to help, and not through a desire to criticize. The people in the steamship business must run their boats with the idea of doing a commercial business, and a vessel must be con-structed in a way that you can handle your tonnage and handle your passengers, supplies, and fuel, and everything that goes to cover the operations of a ship.

Now, this section suggests a very radical change in the construction of a ship, and undertakes to read into the law certain conditions which I do not believe can be complied with. If you are going to construct ships to meet conditions of the "Titanic" disaster, then the rules should apply only to those vessels that are running in the Atlantic trans-occeanic trade and on the northern routes, and not to trade, for instance, to South America or on the Pacific Ocean, where you never meet ice and where ice is un-Now on the question of ship construction.

If builders were required to carry a water-tight skin in-board and follow the outside plating, it will create a condition very difficult to maintain in the physical care of the ship in the spaces between the inner and outer skin. Proper construction would require a space of at least four feet between the two skins, and as the beams, decks, spirketting plates and stringers would all have to go to spirketting plates and stringers would all have to go to the outer skin for proper construction, you would have the ship broken up into a system of boxes, say, every other frame being a belt frame and coming to the outer skin, and all these spaces must be cared for. This would require an enormous number of manhole plates. In case of a collision a ship would cut through the inner skin as well as the outer skin, and if only one compartment was filled there would be no done of the chip sinking whether the there would be no donger of the ship sinking whether the ship was single or double skinned; nor would there be danger if two compartments were filled whether the ship was single or double skinned, and therefore I can not see what particular benefit there would be in this class of construction, even if it was a ship of the "Titanic" class built to run solely in the ice zone.

If the "Titanic" had had an inner hull of that character, and all the conditions of the collision with the iceberg were the same, there is no question in my mind but that the enormous pressure on the outer skin would have ruptured the inner skin, forced the riveting, made the same openings or ruptures, and allowed the water in the same longitudinal length.

Senator Nelson. From my information, if you will allow me, in speaking of the inner and outer skin, the frame—what I would call the frame—is between the two skins,

Mr. Schwerin. Yes, sir.
Senator Nelosn. Now, would that frame extend from
the inner to the outer skin, or would it be a solid frame, or would it not?

Mr. Schwerin. All the frames of the ship would not ex-

tend to the inner skin.

Senator Nelson. What would you fasten it on, then?

Mr. Schwerin. You would have to have sufficient belt frames in each section, perhaps every other frame a belt frame, to properly secure the inner and outer skins together. This increased weight would be a very serious consideration. As I mentioned a moment ago, you have a series of box construction, and those boxes must be taken care of.
You could not let the members inside rust and deteriorate. It would require continual vigilance to keep them up and a very difficult proposition.

Senator Nelson. Would you not have a lot of little compartments if I may use the expression, between the outer and inner skin, between the frames?

Mr. Schwerin. Yes, sir; you could go on and develop the

down that it would be impossible to commercially operate on account of the displacement. In designing a ship we figure as closely as possible, consistent with safety, to save weight. Say, in construction 200 tons of weight was added to the ship and wested in corrying canacity. If added to the ship and wasted in carrying capacity. If that ship made 20 voyages a year, you would carry 4,000 tons of dead, unremunerative weight. If, on the other hand, you saved that 200 tons, you would have carried 4,000 tons of freight, from which you would have received an earning, so you can see how a clight additional weight an earning, so you can see how a slight additional weight is for or against the earning capacity of the ship. Anyone who has handled and had the physical care of large ships knows the vast amount of metal to be kept from corrosion. Under the present construction there is a large acreage of metal to be taken care of, and you will have to realize what it means to take care of this box construction if you carry it up either to the shear or to the between decks. As I



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have said, I can not understand what particular benefit is to be derived from such construction. I believe that in case of collision the ship would be cut through the inner and outer skin. It does not follow that the ship will sink because a single compartment is filled, as no one undertakes today to build a ship without arranging for stability with two compartments filled.
Senator Smith. What have you to say about the "Arkansas" the other day?

Mr. Schwerin. Had the "Arkansas" or the "Utah" or the "Florida" touched ice as the "Titanic" did and under exactly the same conditions they would have gone down without anyone aboard having a chance to stick their nose above the deck.

Senator Smith. She did not go down the other day. Mr. Schwerin. No; she struck under her double bottom. Senator Smith. She struck on the bottom, but she had a

double bottom.

Mr. Schwerin. Yes; I am not speaking against double-bottom construction. I refer to doubling the construction above the double-bottom space. When we constructed the "Korea" and "Siberia," which at that time were the largest "Korea" and "Siberia," which at that time were the largest ships built in this country, the usual construction of the double bottom at the ends or sides was carried up and not down to the turn of the blige. We had an accident with a ship and she was injured where the double bottom was fastened to the ship's side; that is, just above the turn of the blige; so that in this case the double bottom was proposed the country became held where all the side was the state. did not prevent the cargo hold being filled with water. To avoid this situation, the "Korea" and "Siberia" were designed by turning up the ends of the double bottom instead of turning the floor plating down; in other words, if this construction had been the method on the ship I spoke of as having stranded the water would not have entered into the hold and damaged the cargo. These ships have only an 8-inch dead rise of floor. Now

the usual construction bends down like that (indicating) Here are the frames coming here (indicating). We turned

it up here about 4 feet.

Now, if a ship hits a rock on the turn of the bilge right here (indicating) and breaks this in—this being the double bottom—of course the water will go into this cargo space; but if she hits on the turn of the bilge here (indicating) and this being similarly the double bottom the chances are water will not get into the ship.

Admiral Watt. It all depends on that intercostal there.

Admiral Watt. It all depends on that intercostal there.
Mr. Schwerin. That plating is carried down just the same
as if it had ended up on that member. That is not reduced
in weight at all. The construction simply carries the plating up on the inside of the frame making that just so

much higher.

Senator Perkins. With 4 feet of space between the inner skin and the outer, what part of the cargo would it take?

Mr. Schwerin. If you have a ship, say 50 feet beam, you would take off 8 feet of your beam, 4 feet each side. You take off 8 feet of beam. It would be a rather difficult thing to say just what what would reduce your actions. thing to say just what that would reduce your entire cargo space because it would vary with the size and character of

Senator Perkins. Approximately 10 or 15 per cent any-

Mr. Schwerin. I should think more than that.

Senator Perkins. Twenty-five per cent?
Admiral Watt. If that double bottom on the "Titanic" had been continued up 4 feet further than your double bottom, part of that damage would have been restricted to the double bottom space undoubtedly. ried that up 4 feet? You say you car-

Admiral Watt. In order to provide against any damage Mr. Schwerin. Yes.

above the turn of the bilge.

Mr. Schwerin. The double bottom ships are easily handled when stranded unless the damage is above the full of the bilge. turn of the bilge; the inner bottom being water tight, cargo can be lightered and the ship floated. But if the ship is pierced above the double bottom, then the water enters the hold, damages the cargo, and makes the ship more difficult to float. This is merely a question of opinion. The turn of the bilge is a weak spot and a builder may desire to protect himself in that particular direction by turning the inner plates up instead of down, but it is not a wital question in the cargo of the building the inner plates up instead of down, but it is not a wital question in the cargo, and makes the ship more difficulties. vital question in the saving of the ship or in life-saving

Take the ships "Mongolia" and "Manchuria," both about 28,000 tons displacement; the government had provided no light at Makapu and the "Manchuria" ran on the coral reef at that point. The captain was 7 miles out of his reckoning after a run of 2,200 miles. She lay on that reef for 7 months and was finally pulled off. About 60 per cent

of her outer bottom plating had to come off, be

straightened, and returned.
The "Mongolia" went as The "Mongolia" went ashore on the reef at Midway Islands, and she finally came off with her fore hold filled with water. She was ruptured through her inner and outer bottoms. The chief engineer took all the pumps out of the engine room and rigged them up on the shelter deck, and brought her to Honolulu under her own steam, and after temporary repairs she steamed to San Francisco.

I believe in the "Titanic" disaster the tremendous impact bulged in the whole side of the ship. I do not believe it is possible to rip or tear the steel sides out of a ship. I have seen a number of ships that have been ashore, and I have never seen the steel ripped. In the case of the "Manchuria" there was only one plate fractured. Practically all the other plates were rerolled and returned to place.

The "Algoa" struck a reef at Point Bonita entering the harbor of San Francisco. Her collision bulkhead and inner bottom were bulged up and in about 6 feet. All the riveting was started, the plates were opened up along the riveting, but the plates themselves were not fractured, and yet she struck a heavy blow on the rocks and she is a ship capable of handling 12,000 tons of deadweight cargo. When people talk of ripping the sides out of a steel ship, I be lieve such talk is academic.

Now, in regard to the longitudinal bulkheads. That is

merely another device for the construction of inner skins, but I believe that longitudinal bulkheads, in some respects, are more dangerous than strict inner skins. A ship which might float with an open hold—even two—filled with wa-ter might sink if there was a longitudinal bulkhead and the entire weight was carried on one side of the ship. consider such a proposition a very dangerous one for mer-

chant ships.

Not only that, but it is a very difficult thing to handle freight in a ship with longitudinal bulkheads. In the installation of oil, in all our ships we have got to cut the oil tanks into compartments. We must have connection between these oil tanks so that the oil levels in all the We can not have one tank on one side of the ship full of oil and another tank partially empty. Alterations of 25 or 30 tons of weight in a ship will give a list of as high as 10 or 15 degrees, depending upon the method in which the ship has been loaded. The bill also provides that "bulkheads within the limits of the machinery space shall be to the deat of the week!"

extend not less than 25 per cent of the draft of the vessel."

Now in one place you put requirements upon the ship and in another place you take them off. I believe the bulkheads in the engine room and fire room space should extend either to the first continuous deck—that is, the main continuous deck of a ship—as well as every other bulkhead in the ship. I am fully in favor of the proposition that there should be no water-tight doors allowed in bulkheads, especially in bulkheads in the holds. When water-tight bulkheads go through saloon accommodations where you have to have passageway from one compartment to the other, then of course it would be necessary to have the water-tight doors there; but there is no reason why those can not be closed by hand.
Senator Perkins. What is the maximum size you make

the boilers?

I think the largest boilers we have are Mr. Schwerin. an inch boiler plate.
Senator Perkins. It is not practical to make them any

Senator Perkins. It is not practical to make them any larger than that, is it?

Mr. Schwerin. It is not practicable to go beyond an inch and a half boiler plate. If you do, you are in trouble. That is about the limit of the size of the boiler, or the size of the plate you can use.

Now, that brings me to the principal question. I was asked to become a member of the American bureau, and I agreed under the condition that we would make the American bureau the same value in this country as Lloyds in Great Britain. England has its classification rules. So has France and Germany, Italy and Austria, and there is no reason why we should not have as dignified classifica-

no reason why we should not have as dignified classifica-tion rules in this country as in any other.

Senator Smith. I am glad to hear you say that.

Mr. Schwerin. But I do not think these classifications should be made by law. I believe that they should have the authority of law and be subject to the intelligence of the ship men of this country the same as they are in all other countries. This is my idea—that the American bureau should form a committee which would consist of naval officers and ship owners and operators, its own board of directors, and the Chief of the Steamboat Inspection Service of the United States, and formulate classifications for this country equal to that of Lloyds.



It does not require a law to do this. Any American it does not require a law to do this. Any American desiring to construct a ship would naturally construct it under our own classification. I was very much surprised to hear some one say you could build a ship in this country 400 feet long of tin and, if you complied with the life-saving apparatus, you could send her to sea. (This statement was made by Capt. I. N. Hibberd, supt. of the Pacific Coast S. S. Company of San Francisco.—E. F.) I have built ships in this country. I know that those ships were subject during construction to a very rigid examination by the local board construction to a very rigid examination by the local board of inspectors and that they look very carefully to the construction—the character of construction. The law says very clearly that the original certificate can not be granted unless a vessel is suitable in all respects for the trade for which she is intended.

Senator Perkins. The power to make rules and regula-tions has been delegated by Congress to this Board of Supervising Inspectors, has it not?

Mr. Schwerin. The Board of Supervising Inspectors carry out the legislation that is enacted by Congress; it is a part of the administrative body of the Department of Commerce and Labor especially charged with the construc-

tion and operation of our merchant service.

Senator Perkins. And those rules and regulations have been formulated by this Board of Supervisors?

Mr. Schwerin. No; not entirely. Some of the rules are the law as enacted. Other rules are formulated by the Board of Supervisors in their meetings—rules to provide for the administration of the law.

Senator Perkins. Congress does not go into details?

Mr. Schwerin. Congress passes a law and the board then provides rules and regulations under which that law may be administered.

Senator Perkins. That is the way I understand it.

Therefore, it is not necessary for Congress to enact a law as to details, as we propose doing.

Mr. Schwerin. I think it would be a great mistake for

Congress to pass detail laws, as that will tend to stop all progress. It is just the same as Congress undertaking in this bill to pass a law specifying in detail the character of lifeboats. I have submitted to Gen. Unler specifications for a metal lifeboat which will cost more than the one provided for in this bill. The specifications in this bill are taken bodily out of the present rules and regulations of the Steamboat Inspection Service.

Senator Smith. Is that something that you want to put on your vessels?

Mr. Schwerin. No; what I wanted to do was to get a metallic lifeboat that every builder would have to absolutely comply with. In other words, where there would be no question as to an inspector in one part of the United States passing a boat and that same boat be condemned by an inspector in another part of the United States who might be more critical.

If you pass such conditions into law you do not get the If you pass such conditions into law you do not get the benefit of improvements in equipment of your ship without going to Congress each time to get modifications of the law. If you have competent men, as you have in the inspection service—they are competent to pass upon what is a proper lifeboat. If the Government provides by law the amount of boats or rafts that shall be provided, it seems to me that the inspectors are amply able to take care of the details of building hoats and rafts.

to me that the inspections are amply able to take care of the details of building boats and rafts. Senator Smith. Take the regulations of the British Board of Trade. You must admit that the tonnage basis as a basis for life-saving equipment hardly meets the present requirements?

Mr. Schwerin. Well. I do not want to get that mixed in your mind. The classification is one thing, and the equipment provided by law, and required by law, is an entirely ment provided by law, and required by law, is an entirely tain clasisfication. You must provide that ship with the different thing. For instance, you build a ship under cerequipment called for by the law. Congress may pass a law which shall state how much life-saving apparatus will be required upon a ship, and the builder must put that on. Now, that has got nothing to do whatever with the classification of a ship, which provides for the weight and size of the different members, provides the number of talk. of the different members, provides the number of bulk-heads, etc., the size of the engines, and the character of the construction, but it does do this: The owner submits to this classification board amidship section and longitudinal section in detail, so that the board can go over it, and see if all the members provided for are equal to or heavier than the classification rules specify for that particular kind of ship.

Senator Smith. That far it is all right for us to put that into a law?

Mr. Schwerin. No; you do not want to put that into a law. In my opinion we have gone along in this country at

cross purposes, for this reason: We have a steamship-inspection service which in some respects assumes some of the functions of a classification bureau, and yet it has not the scope or authority of a classification society. Now there is no reason why we should not have a classification bureau in this country similar to the Lloyds classification in England, which is a part of the British Board of Trade. There is no reason in such classification society why we should not have as a director member the Chief of the United States Steamboat Inspection Service. He would be familiar with the modifications and changes which are adopted from time to time and embodied in the classifications. The United States Government should recognize the rules as official.

Then if a new ship is classified, the Government inspectors know that that ship is going to be constructed on lines authorized by the United States, because the Government of the United States must recognize this classification as the official classification of America. You can pass a law which provides that all ships built in America must be built under the classification of the American bureau. Then a man building a ship must submit all his plans for approval and clasisfication for that particular

plans for approval and clasisheaton to character of ship.

Senator Smith. Now let me take you one step further. Can we properly pass a law which will oblige foreign vessels using our harbors to meet our classification?

Mr. Schwerin. Absolutely no. In no way in the world. There is no way in which you can do that.

Senator Smith. Why can they not submit plans to this classification board that should be subject of American review?

Mr. Schwerin. Suppose the builders of the "Titanic" had submitted the plans in detail of that ship for a new classification today. You would have to submit them to Gen. Uhler, for instance, and he could call his board together. What would he do with the plans?

Senator Smith. But suppose we had had a classification board with American standards, operating along lines that

we thought, or that America thought, were proper?

Mr. Schwerin. All right; say that we had a classification board in this country equal to the Lloyds classification, which is the standard the world over.

Senator Smith. Which we really ought to have.

Mr. Schwerin. Now, those plans would be submitted to the eventual comparison of the board. Undoubtedly, they

the executive committee of the board. Undoubtedly, they would pass those plans as way above their own classification, as they had to be, because that was a special ship, so large that it required special calculations which carried her beyond any usual classification rules that existed.

Senator Smith. The point I wanted to make is this: You

approve of our license plans, do you?

Mr. Schwerin. Yes, sir. Senator Smith. And the exaction of an American fee for classification?

Mr. Showerin. Yes, sir.

Senator Smith. You approve of the filing of their corporate papers here?

Mr. Schwerin. Yes, sir.
Senater Smith. As a matter of American information. Now, suppose we have a classification board—and I think the suggestion you make is an excellent one-composed of practical shipbullders with an officer or two of the Gov-ernment, and with the head of the Bureau of Navigation. the head of the Bureau of Steam Engineering as members of that board, do you not think that when they come to pay the fee to get the license, and make other preliminary pray the rector get the heense, and make other prehimmaly arrangements with this Government, that it would be appropriate for them to submit their plans, also the manner of construction and the question of equipment at the same time? Suppose Harlan & Wolf say: "We have got to meet an American exaction here and we must send these plans over there to this American classification heard to review over there to this American classification board to review them." It seems to me it would tend to dignify the American can interest in such a matter, especially as they seek to use our harbors and carry our people, and the fact that they have built as much depending on that as anything

Mr. Schwerin. I quite agree with you, but you go beyond the point of safety. I can see no reason for their sending over here their plans and specifiactions for the construction for the construction for the construction of the construction for the construction f tion of that ship, but if we have clear, definite laws in regard to what a foreigner must comply with in relation to the life-saving apparatus, and you want to say that all ships building must submit the life saving apparatus building must submit the plans of life-saving apparatus and equipment, together with the number of people that they will carry, and that should be passed upon by a board in this country, otherwise they could not get a passenger certificate to carry passengers, I quite agree with you.



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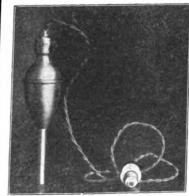
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Mr. Schwerin. I built the "Korea" and "Siberia" at Newport News, and the "Mongolia" and "Manchuria" at Camden, N. J. Senator Smith. Were the plans for those ships made in England? Mr. Schwerin. No, sir; the plans of two of those ships

Mr. Schwerin. No, sir; the plans of two of those ships were made in my house.

Senator Smith. Exactly.

Mr. Schwerin. None of those ships will float with four compartments full of water.

Senator Smith. I understand that. I do not suppose any

one can build a ship that will float with four compartments full of water.

Mr. Schwerin. It is impossible. Senator Smith. That puts too much weight on the ship, but if you bring your double protection higher, it seems to me you avoid possible danger. They did not do that in the

Mr. Schwerin. She had a double bottom.
Senator Smith. She had a double bottom, but far below the water line.

Mr. Schwerin. From the turn of the bilge.
Senator Smith. I noticed on the "Olympic" the second bottom, but that was no special protection to the "Titanic" at all.

Mr. Schwerin. Not below the water line. Senator Smith. I am not quite sure about the "Mauretania."

Admiral Watt. She has a longitudinal bulkhead.
Senator Smith. If the "Titanic" had been constructed on the same lines as the "Mauretania," her chances of surviving that blow would have been a great deal better than constructed in the way they were. The "Mauretania" and "Lusitania" were constructed under the royal commission of England, and they fixed the conditions upon which that beat should be constructed because they proposed to some boat should be constructed because they proposed to appropriate it into the naval service of England in case of emergency, and in that situation they got the best.

Now, if that is true I do not see why they can not profit

by suggestions from such practical men as yourself. Suppose you were a member of the American classification

Senator Smith. But Mr. Andrews, who built that ship, must have been the most disappointed man in the world when he saw that four or five compartments were flooded with water in that accident. Now, suppose that those plans had been sent over here, suppose from your experipants that the suppose from your experipants the North Atlantic there. ence you had been taught that in this North Atlantic there was danger from ice, and if a berg ripped a ship it was apt to go into more than two compartments, and you had brought your double case up high enough to have given the exposed compartments additional protection, do you not think if you had sent hack word to those people that not think if you had sent back word to those people that you thought that would be a desirable change to make, that they would have thought it over? Nobody supervised the construction of that vessel except Harlan & Wolff. The Government of Great Britain did not put a man on it until the morning she sailed.

Now, we let them come in and out of our harbors without exacting any compensation at all. Why can not we, the foremost Government in the world, demand a prelimination of the compensation nary review of vessels intended to operate in American

Mr. Schwerin. Senator, to be perfectly fair in this proposition, we have had to go to the other side to get our real experience. There are more brainy men in the shipbuilding over there than there are over here.

Senator Smith. Undoubtedly.

Mr. Schwerin. I do not concede—although I have been a naval officer—I do not concede that naval officers have a naval officer—I do not concede that naval officers have any experience in merchant ship construction, operation, or maintenance. I venture to say that had a plan of the "Titanic" been setn to the most competent naval architects in this country they would have gone over those plans with great interest and undoubtedly would have been very largely instructed as to the methods in which the structure of that great single girder was carried out in that ship. Senator Smith. Suppose they had come to you—how many ships have you built in your life?

Mr. Schwerin. I have built some of the largest ships that have been built in this country—the "Korea," the "Siberia," the "Mongolia" and the "Manchuria." Senator Smith. Where did you build them?



board and met in session with others in Washington occasionally to review the plans of ships about to build for the American trade. You could make suggestions; even an unpretentious man made a suggestion here the other day that caused the experts around this room to open their eyes.

Mr. Schwerin. What was that, Senator? Senator Smith. I can not remember now. I do not remember the man's name. I think it was McKeige.
Mr. Buff. It was Mr. McKeige.

Senator Smith. He made a number of most admirable suggestions. They were, of course, of very little importance in the general construction of ships, but good.

Mr. Schwerin. I read his testimony. He wants you to measure boats from the inside of the tanks. Just to illustrate how some testimony may be given here, he wanted you to measure boats from the inside of the air tanks—length, breadth, and depth—for cubic capacity.

Senator Smith. I did not follow that part of his statement very closely.

Mr. Schwerin. But he lost sight of the fact that a fraction was used which provides an allowance for the air tanks—tonks and he dely not to measure from the invide and use

tanks, and he told you to measure from the inside and use the length, breadth, depth, and also the fraction. Senator Smith. He made one or two other suggestions

that I noted in my bill that everybody here thought was very useful, and I can not believe but what you can make I do not concede that any shipbuilding company in England has an entire monopoly on the advanced

intelligence of the world.

Mr. Schwerin. I designed four ships—37,000 tons—which we are trying to build, if Congress will let us, and I submitted those plans to Lloyds, and they made practically no change in the midship section. The "Mongolia" and "Manchuria" are built under the Lloyds. The "Korea" and "Siberia" are built under the American Bureau and the Bureau of Veritas.

Senator Smith. How closely did you follow their specifications?

Mr. Schwerin. Lloyds' absolutely. Senator Smith. You did not do it in the other two, did vou?

Mr. Schwerin. In the "Korea" and "Siberia"?

Senator Smith. Yes.

Mr. Schwerin. No; I submitted the plans and the Lloyds turned them down because we called for side hatches, and the British Lloyds up to that time had never permitted side hatches. As the result of that controversy Lloyds established their headquarters and their own staff in America, and since then have modified a number of their arbitrary rulings. That controversy also brought out that the Lloyds did not consider that American shipyards were competent shipbuilders, and therefore when they undertook to pass on the plans for American shipyards they always made everything very much heavier. We maintained that we had a right to put side ports in these big ships with the proper compensation.

Senator Perkins. Is it not a fact that the American sheet iron and steel has greater tensile strength than that of the English plates, and greater elasticity?

Mr. Schwerin. There is all kinds of steel. For instance, the mild steel for ship construction is of a certain tensile strength and elongation. But all steel must be tested by inspectors. If you build under Lloyds rules, the Lloyds have their own inspectors and they go to the mills and test and stamp it, and it has got to come up to their specification. In the same way the American Bureau sends their men to inspect the steel, and the steel must come up to the required specification. You can have steel of 20,000 pounds tensile strength up to 125,000 pounds. You can get any kind of steel you specify. There is just as good steel in England as there is here and just as good here as there is in England.

Senator Smith. I have just received a letter from one of the most prominent men in England upon this subject which I will place in the record.

Senator Fletcher. I understand, Mr. Schwerin, that your view is that we can legislate so as to require life-saving equipment. For the protection of life we can pass laws that will oblige foreign ships to porvide lifeboats and things of that kind for the protection of life?

If that is true, why can not we provide the manner of the construction of the ship for the same reason, for the protection of life? Why can not we provide, for instance, that these plans shall be submitted to a board here and passed upon, in reference to these bulkheads and the width of the bulkehads and the arrangement of the bulkheads, and all that sort of thing, not merely for the purpose of controlling the construction of the ship, but put it on the broad ground of saving and protecting human lives? There

is a distinction, in other words, between our power to oblige equipment for life portection and compelling construction for life protection.

Mr. Schwerin. None whatever. I believe the Congress of the United States has the right to pass laws which will say what shall and what shall not enter its ports. But is it a wise thing to do? Is it for public policy—and our legislation is generally controlled by public policy. Is what I mean in answer to Senator Smith's question. That

Senator Fletcher. I understood your view was that we

had no authority.

Mr. Schwerin. Oh, no; I think this Government has the right to do pretty much what it pleases within its own ter-

Senator Smith. Suppose we fixed a minimum standard of construction. A letter I received from one of the most prominent men in England says:

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It would undoubtedly force the hand of the Government here and aid us greatly in our work if you were at once to here and aid us greatly in our work if you were at once to decline to accept the British Board of Trade certificate and insist upon an adequate American inspection of all ships coming into American ports. This inspection should include all life-saving appliances and should ascertain whether or not water-tight compartments, even if passed as efficient by the Board of Trade here, are really of values the proper resid sinking of

or nothing but means to insure the more rapid sinking of the ship should accident take place."

Mr. Schwerin. That statement may be very unjust, so far as the shipowner and operator is concerned. Although this gentleman may be a very prominent man, still if you

this gentleman may be a very prominent man, still if you should put him in a sailboat or a rowboat he might not know one end from the other.

Senator Smith. He is as anxious as we are to accomplish some satisfactory and permanent results. Senator Fletcher, Senator Perkins and myself are only anxious that the construction of ships in the future and their equipment and management shall be appropriate. Why do you submit your plans to the Lloyds?

Mr. Schwerin. Because I wanted a classification.

Senator Smith. You wanted a classification?

Mr. Schwerin. Yes, sir.

Senator Fletcher. For insurance purposes?

Mr. Schwerin. For insurance purposes and as a value for the ship if I wanted to sell her. You can not sell a ship so well unless you classify her and keep up the cer-

ship so well unless you classify her and keep up the certificate by periodical surveys.

Senator Smith. That is reason enough. That is a good reason.

Mr. Schwerin. It is a very important matter with regard to a ship to have her classified.

Senator Smith. But if you were going to operate it as you operated those other two vessels and use it yourself, you would not have gone over there at all, would you?

Mr. Schwerin. I consider myself just as competent to classify my own ships as the Lloyds or anybody else. I think you, Admiral Watts, will agree with me, will you not? Senator Smith. If that is true, you can help us classify. Mr. Schwerin. At the same time I can not sell that ship at her proper value if she is not classified and the surveys.

at her proper value if she is not classified and the surveys show she is kept up.

Senator Smith. But suppose we had an American classification also. I think that some people who build ships would in the future be quite anxious to have the approval of the board, consisting of such men as Admiral Watts and yourself and other men who would bring their minds to

bear on that question. Mr. Schwerin. You must bear in mind that they have been building steel ships over there for a great many years and so have a greater experience in the art. While we have built but few they have been building a great many years. for years. When we started to make a construction corps for our naval service we took graduates from Annapolis and sent them to the University of Edinburgh and educated them as naval architects. They took the highest honors there in their classes, so after quite a period we created one of the ablest constructive bodies in the world. I think our naval constructors are as competent to design and build the finest battleship as any in the world, but we had to go over there for this education because there were men there who had devoted their lives to that particular study, there was no opportunity to gain the experience in this country. What we want the American bureau to do is to establish a classification in this country that has all the dignity of the Lloyds and that the Government shall recognize that ships built in this country under that classification are to have all the dignity of the Lloyds. I do not want to go to England for classification. I would rather class here, but I want our classification to have the dignity and value of the English or French classification.



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Senator Perkins. Under whose auspices is the present American shipping bureau?

Mr. Schwerin. It is an organization very much the same as the Lloyds. It is run for the purpose of making some money. I do not know that they make much, but it is run

for the purpose.

Senator Perkins. How does it compare with the Bureau of Veritas or the British Lloyds?

Mr. Schwerin. I think it is coming up to the Bureau of Veritas very fast, but the British Lloyds is ahead of them Veritas very fast, but the British Lloyds is ahead of them all. But the society must have business to obtain some money. It must maintain its inspection service all over the world. For instance, if you classify in the American bureau and have an accident in Honolulu, you must have a survey and have inspectors there to do it. There must be a central organization that takes care of and appoints these inspectors all over the world. In any port in the world if you have an accident you can go to the Lloyds world, if you have an accident, you can go to the Lloyds

world, if you have an accident, you can go to the Lioyas and have a survey.

Senator Smith. Have we not practically in force now what our department recognizes and what you indorse?

Mr. Schwerin. Under the Bureau of Veritas?

Senator Smith. Yes.

Mr. Schwerin. That is a French organization.

Senator Smith. Take the American bureau?

Mr. Schwerin. No; we have not. Some new blood has gone into the American bureau lately and I think it will be brought up to a high level. brought up to a high level.

Senator Smith. It is the nucleus of what you are trying

to build now?

Mr. Schwerin. Yes, sir; it is there, and there is no reason why it can not be made as strong an organization, as far as American ships are concerned, as the Lloyds is to British shipping.
Senator Smith. What effect do you think this bill would

have upon classification?

Mr. Schwerin. I beg your pardon.
Senator Smith. I say, what effect do you think the construction of American vessels under this bill would have upon classification?

Mr. Schwerin. I do not see anything in this bill that gives it the dignity of classification. I think the bill becomes undignified when you put in here such things as the detail of lifeboats, etc. I think those details should be left to the inspectors.

Senator Smith. That was done rather tentatively and only to show that we were no longer going to depend upon the discretion of anyone. The result of that bill is that today there will be promulgated by the Department of Commerce and Labor the most advanced step ever taken by this Government in the equipment of boats with lifesaving devices.

Senator Perkins. Yes; in different zones. Senator Smith. Yes; they have a zone of that kind and

only care for 60 per cent.

Mr. Schwerin. That only pertains to a special class of boats.

Senator Smith. Like this Eastern Maine company, that runs within 50 miles of the shore.
Senator Perkins. You heard Gen. Uhler's statement,

did you not?

Mr. Schwerin. Yes, sir. All our boats carry life-saving apparatus, as called for in the General's statement, and we

also carry our boats rigged out.

Senator Smith. You mean a full equipment for all the passengers and crew?

Mr. Schwerin. Boats and life rafts; yes, sir.

Senator Smith. You are fully equipped?
Mr. Schwerin. Yes, sir; with lifeboats, including life The boats are carried in that fashion (indicating). We do not have to rig them out at all. All you have to do is to pull the targle out of the gripes and lower the boat. I would not like to see the real inspection duties of the Steamboat Inspection Service changed by a general law which would deprive the officers of that service of their judgment and which did not leave to them the details of

administration as it is now and as it should continue.

Senator Smith. There is some reason in that suggestion.

Mr. Schwerin. If Congress should pass such an act as this, and then we should have some improvements, naturally we should want to take advantage of such improvements, and if you put detailed specifications in the law, you can not have the advantage of these improvements if they conflict with these specifications unless Congress modifies the law. I do not believe that that is good legislation. For instance, suppose a skip has her boats carried lation. For instance, suppose a ship has her boats carried away in a typhoon and she is in a foreign port where it is impossible to obtain boats under the legal specifications. She has got to come home and she will have to outfit with the foreign boats. These boats are perhaps as good and perhaps better boats than are provided for in the legal specifications, and probably would be passed by the inspectors unless they were held to hard and fast rules by the statute. the statute.

Senator Smith. How about the radio aspect of our law?

Are you equipped with radio?

Mr. Schwerin. Yes, sir; we have the most powerful radios afloat. We wireless over 4,000 miles. I was very severely criticised because I would not immediately installed. radio on our steamers. Of what use to us was a 250-mile service? Our steamers are often two or three thousand miles apart, and we wanted something of value and not a toy.

senator Smith. Have you two operators?

Mr. Schwerin. No, sir; one.
Senator Smith. How about the two operators?

Mr. Schwerin. I would like you to consider that phase as to the coastwise trade. We practically operate three different lines. One is strictly a transoceanic line, one is attrictly a feering coastwing line and the other is a dostrictly a foreign coastwise line, and the other is a domestic coastwise line. Now, on the strictly coastwise line between San Pedro, San Francisco and Portland last year we carried about 75,000 people, and the total radio earnings on that line were not over \$20. The passengers had no use for it, and the difficulty is to keep the operators, who have really nothing to do from getting into trouble who have really nothing to do, from getting into trouble with the lady passengers. There is nothing for them to do. If you have two boys there on duty day and night, it will be more difficult to handle be more difficult to handle.

Senator Smith. Suppose we make provision— Mr. Schwerin. Excuse me. I was going to say that those boats run within five miles of the beach and are always in sight of another ship excepting in foggy weather. I do not suppose that a master of our ship going along the coast is practically ever out of sight of some other vessel, some schooner, or oil tanker, or other passenger boat a couple hours a day and is never out of sight of land except in foggy weather. It does not seem to me that it is necessary, with a great number of boats about and close to shore, to have two boys on watch with nothing to do until they get thoroughly disgusted with the ship simply waitthey get thoroughly disgusted with the ship, simply waiting for a disaster. That is all they are doing. It is my belief that one operator is sufficient on that line.

Our boys have orders to cut in at frequent intervals.

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There is a certain amount of commercial wiring on that service, 24 hours before the ships get into San Francisco, and before they get into Honolulu. The rest of the time, with the exception of the captains asking each other how they are, the radio boys are obtaining information for their newspaper from one ship to the other, and there is absolutely nothing to do in the service.

I do not see there is a necessity in this line for two

Senator Smith. Of course, in case of accident, the intermitten attention to the wireless apparatus might just miss what you ought to have, just as it did in the case of the "California" and the "Titanic."

Mr. Schwerin. Well, my idea of that proposition is this:

I suggest again the service of the inspector instead of a

Mr. Chamberlain, the Commissioner of Navigation, has inspectors who have charge of the radiotelegraph service. It seems to me that the law should provide for each ship such operators as may be specified by the Commissioner of Navigation. On a trans-Atlantic service, where there is a heavy toll and heavy work for one man to do, he may provide for two or three. On another little boat, running on some lake, he would only provide for one at most. There might be no other boat there and no shore station; yet, if you passed this bill, the boat would have to have wireless and two operators.

Now, on the Panama line, he may say this service requires one; on the coastwise, one; on the run between San Francisco and Honolulu he may say two, or may say three, but let him decide what the requirements of the Pacific route may be and not make it an arbitrary rule that because it is necessary on the Atlantic to have three, four or five operators, perhaps, it is necessary to have the same number of operators upon every class of ship and in

every class of service.

Senator Smith. Yesterday we had this matter up, and it seemed to me to be admitted that one of the crew could be easily taught to recognize the emergency or distress call very readily, and that one of the crew might be substituted for that purpose on some of these lines. Would that be a hardship?

Mr. Schwerin. No; but I think that is one thing that

Mr. Schwerin. No; but I think that is one thing the should be under the rule of the administrative officer. think he could regulate that to better advantage than in any other way.

I do not suppose there is any use wasting any time in a consideration of these life tanks in boats, etc., because, as I understand it, where you speak here of hull construction of suitable noncorrosive material, I do not know-perhaps the naval constructor can tell us—where he can get non-corrosive material on board ship. I have never discovered anything on board ship that was noncorrosive. If it was possible for us to get galvanized iron for the construction of our boats instead of galvanized steel it would go a long ways to making those boats a better class of boats and prevent the rapid deterioration of the metallic lifeboats. With the best of care metal lifeboats of galvanized steel pitt badly. That will happen sometimes in one month. Galvanic action will start up in a lifeboat and cut her full of holes. I do not know whether you have had that in the Navy, but we have found it to be the fact. We are trying

Senator Fletcher. What do you think about requiring ships to issue tickets good for a passage on a ship and giving the passenger a seat in a particular lifeboat and requiring every passenger to know where his lifeboat is, and to be put through the drill?

Mr. Schwerin. We did that. Every passenger in the

Mr. Schwerin. We did that. Every passenger in the old days had a ticket which gave the number of the boat, and the officer of the boat had a list of all the passengers who were stationed in his boat. That was all right when we used to run from 20 to 30 passengers, but when we got to running with three or four hundred, they simply said it was impossible; that they were not going to station; that there was no reason for that.

In the first place, we did not contemplate the "Titanic" In the first place, we did not contemplate the "Titanic" disaster; we do not now expect to have them every day in the week, if ever again. We took all the people off the "Mongolia" seven miles off shore, with the crew, and put them on the ship again—some 600. We took all the people off the "Manchuria." I think there was some 400 people on that ship. At the "Asia" wreck we had everybody saved within 30 minutes after she struck. We have never least anybody that way no lives. lost anybody that way-no lives.

Senator Smith. What about searchlights?
Mr. Schwerin. I do not see any objection to putting searchlights in a ship, but I think they are utterly useless searchlights in a ship, but I think they are utterly useless for live-saving. We have them on our ships, but never use them except in docking. You can not find a buoy with them unless the buoy is white. We have 40-inch projectors. I do not know what the largest in the Navy are now.

Admiral Watts. Sixty.

Mr. Shewerin. Well, in the Navy they have got to go up on those towers for results; they have been going up higher and higher with searchlights in order to get a light zone to protect the ship. If you have a searchlight on

zone to protect the ship. If you have a searchlight on board ship it is only good for 1,100 feet—you can not distinguish anything very readily on the water with a beam that is not more than 12 inches in diameter—the ray of light, and you can not distinguish anything unless it is white. If an officer of the deck should use that sweep of horizon every five minutes, the five minutes that he did not sweep the horizon his eyes would be utterly useless to him.

Senator Smith. He might sweep it oftener. But if the "Carpathia" had arrived at the scene of the "Titanic" disaster in the night it would have been a very convenient thing to pick those lifeboats up by searchlight. It looks as though it should be part of the equipment. Some of

the companies use them voluntarily.

Mr. Schwerin. We have them to pick up our mooring buoys and docks. Practically all the coastwise ships carry

Senator Smith. Where do you carry it?
Mr. Schwerin. On the top of the pilot house. As far as a life-saving apparatus is concerned, I do not consider it of any value whatever. I would consider it a danger if there was any law which compelled throwing the light around at sea.

Senator Smith. I think so, too, although when there is a situation that is known to be dangerous perhaps it might be of some service.

Mr. Schwerin. Oh, yes; it would be just exactly of the same value as your own boats would be to rescue people from another ship, where you use that searchlight to help those boats in maneuvering to get people out of the water.

Senator Smith. Suppose a sailing ship were crossing your bow and you happened to detect its outline—as I noticed a case the other day—what would be the effect of that?

Mr. Schwerin. If I was officer of the deck and a fellow flashed that for me, I would want to kill him. I can see with my eyes; I never required a pair of glasses to first find the object. No officer of the deck wants a pair of glasses when he is up against that kind of a proposition. His eyes are better free. If you are on deck a small sailing vessel could not pass you without your seeing the running lighter. running lights.

Senator Smith. You know about the testimony of Fleet, the "Titanic" lookout. How do you account for the fact that he did not see this iceberg?

Mr. Schwerin. He was probably behind the dodger.
Senator Smith. Please explain that.
Mr. Schwerin. He was crouching down behind the dodger; it was a cold night, and he was behind the dodger. There is no doubt in my mind that Capt. Smith gave instructions to his men to keep a sharp lookout. The ship did not slow down. When the ship did not slow down. did not slow down. Nobody can convince me as a sailor man that he did not know that he was in the neighborhood of ice, and was on the lookout for it; that he expected to see it, as he had seen it over and over again, but he just made the miss. The whole loss of the "Titanic" is due to one thing and nothing one thing and nothing else. It is not construction of life-saving apparatus, or anything of that kind. It is due to the personal equation of the captain of that ship.

Senator Smith. That has reference to the loss of the boat; not to the loss of life.

Mr. Schwerin. You can never by any means in the world provide against a similar disaster, no matter what you do.



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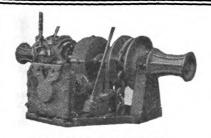
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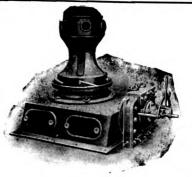
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It will occur in some other direction.

Senator Smith. That is the loss of the ship. But how about the loss of lives?

Mr. Schwerin. Of course that would not have happened if he had not made the miss in the first place.

Senator Smith. And it would not have happened if they had been efficiently prepared for such emergency.

Mr. Schwisin. Well, I do not think it is a fair proposition to criticise the operation of all other organizations based upon the "Titanic" incident. There is no doubt that the ship was rushed from the builders' yard to perform an advertised schedule, and there is no doubt that she started off without the people being thoroughly shaken down in the ship because nobody dreamed for a moment that such a magnificent fabric was going to meet such a fearful fate. It was beyond the belief of all. We could not believe it, when we heard of the disaster, that such a thing was when we heard of the disaster, that such a tring was possible. We could not take it in. And yet it did happen. It only shows that man with all his forethought can not guard against disaster either on land or sea.

Senator Smith. No; but today, the sister ship, carrying double her equipment of life-saving appliances is, so far as

she is able to do so, guarding against a repetition of that

Mr. Schwerin. Yes, sir. I do not wish to prophesy. am only giving this as a practical illustration. If the sister ship of the "Titanic" should go through exactly the same experience as the "Titanic" did, having all her new lifesaving apparatus, and there is a half gale of wind blowing, they would not be able to get those boats in the water and save anybody. You can not provide against each and every exigency in this matter of saving life at sea.

Senator Smith. But under exactly the same conditions,

with this full equipment, she could have taken care of the

balance of her passengers and crew.

Mr. Schwerin. Yes, sir; but probably this particular disaster will not occur again. The hotel called the Palais Royal, corner of Fortieth Street and Sixth Avenue, New York, burned up one Saturday night years ago with great loss of life, which caused the fire-escape agitation. Still you might have a similar disaster at the Waldorf, where, you might have a shintal disaster of the same reason it could be contended that each window of the hotel should be fitted with a fire escape so that the guest of each room have his own egress from the hotel.

Senator Smith. There are portions of the hotel from which you might escape through the smoke; but there is no place where you can escape at sea unless you have a

craft, and the craft was not furnished in this instance.

Now the situation is very different. They are furnishing them now and they are doing it because they see the necessity of meeting public expectation. How serviceable they will be will depend altogether on weather and conditions that augmented it but under the conditions that augmented in the service will be the service and conditions that augmented in the service will be the service with the service will be the service with the service will be the service with the service will be s ditions that surround it, but under the same circumstances they would not again be caught short in their equipment. Senator Fletcher. If the "Titanic" had been making 10 knots an hour she would not have had this accident, would

she?

Mr. Schwerin. No, sir. Not to the serious results. Senator Fletcher. It is a question of speed, after all-

excessive speed.

Mr. Schwerin. Mr. Chairman, I have an engagement at the White House this morning at 10 o'clock, and I would like to be excused at this point. I will be very glad to come back before the committee.

The Chairman. We will be very glad to have you do so.

We will have a meeting on Saturday next.

Mr. Schwerin. There are some other things that I would like to have the opportunity to speak about to the committee, some of the difficulties we have as steamship operators in trying to comply with the law.

Senator Smith. You have been very helpful, and we

agree on a good many points. We are not headstrong, but

we want an American standard.

Mr. Schwerin was thereupon temporarily excused.

1912 PROVED GOOD YEAR

Mitsui & Co. state that the business conducted through their San Francisco office and its subsidiary in Portland has increased considerably since January, 1912. In fact, this company has enjoyed during 1912, just closed, a 40 per cent increase over 1911. We take pleasure in publishing the outlook of our friends for the year 1913, as they state: "As regards the year 1913, every indication is quite encouraging for a year as prosperous at least as that of last year."

PRESIDENT OF INTERNATIONAL MERCANTILE MA-RINE COMPANY TENDERS HIS RESIGNATION

We note that the resignation of Mr. J. Bruce Ismay from the position of chairman, managing director of the White Star Line and president of the International Mercantile Marine Company is confirmed and will take effect on June 30 next, on which date Mr. Harold Sanderson, the first vicepresident of the latter company will succeed Mr. Ismay. However, we sincerely regret that press expressions, which after all are only the opinion of men in charge of such respective organs, continue to stigmatize Mr. Ismay, practically declaring that he would go through life branded with the mark of Cain. Such uncalled for censure we can but denounce and must consider absolutely unjust, on the subject of which our views were explicitly expressed in the Pacific Marine Review's June issue.

To continue, these denunciations of Mr. Ismay, as above referred to, are all the more provoking on his resignation from positions of honor which he has indeed creditably filled for number of years, showing remarkable skill and foresightedness, and since Lord Mersey's able decision particularly and practically stated that if Mr. Ismay had not accepted the last chance of saving his life in the last boat which contained only a limited number of survivors, it would have only meant one more life added to the appaling list of deplorably sacrificed people in this terrible catastrophe.

Many agree and many positively know that Mr. Ismay who was only a passenger on board this unfortunate vessel did his best to save others. Did he commit a crime by saving himself? We are still wondering how many of Mr. Ismay's denunciators would have taken a different view if they had been in his place. Does it not appear devilish to expect one to apologize for being alive? The Pacific Marine Review asks Mr. Ismay to accept its best wishes for a long and contented life on his retirement which he so well earned and fully deserves.

SHIPPING IN CONGRESS

During this short session of Congress no action has been taken on any shipping bills.

The following bills are in the committees to which they were referred when introduced:

S. 6930, a bill introduced by Senator Brandegee relating to the maintenance of actions for death on the high seas and other navigable waters; S. 6976, introduced by Senator Smith of Michigan to regulate navigation by steam passenger vessels, to amend Sections 4400, 4471, 4488, 4490, Section 3 of Act of July 9th, 1886, Section 1 of the Act of June 24th, 1910, and for other purposes; S. 7038, introduced June 3rd, 1912, by Senator Nelson to promote the safety of ocean navigation; H. R. 25102, introduced June 5th, 1912, by Mr. Sims to amend Section 4347 of the Revised Statutes as amended by the Act of February, 1898, so as to permit foreign vessels to engage in the transportation of merchandise between the ports of the United States, territories and insular possessions through the Panama Canal. This bill is a brief one and reads as fol-

"Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That Section 4347 of the Revised Statutes, as amended by the Act of February, 1898, shall not apply to foreign vessels engaged in the transportation of merchandise and passengers between ports of the United States, Porto Rico, Hawaii, Guam, the Philippine Islands, and Alaska through the Panama Canal."

H. R. 23067, introduced by Congressman Humphrey of Washington, is as follows:

"To amend the laws relating to navigation. Be it enacted by the Senate and House of Representatives of the



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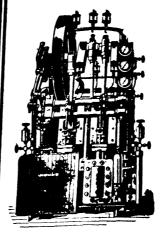
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United States of America in Congress assembled. That no passengers shall be carried by water to or from any port in any state of the United States to or from any port or place in the territory of Alaska, either directly or by a foreign port, except in a vessel or vessels of the United States, under a penalty of two hundred dollars for each passenger so transported and landed."

H. R. 23001 was introduced in the Senate on June 4th, 1912, and is an act to amend Section 4472 of the Revised Statutes of the United States relating to the carrying of dangerous articles on passenger steamers.

H. R. 23676, introduced April 23rd, 1912, a bill to regulate the officering and manning of vessels subject to the inspection laws of the United States, is now before the Senate Committee on Commerce.

H. R. 23470 is now before the Senate Committee on the Judiciary.

We received these advices from Washington, D. C., on December 28th, 1912, and as far as we have been able to learn no further action has since been taken in regard to the bills mentioned above

MARINE INSURANCE NOTES

While the figures for the marine insurance business for the year 1912 are not yet complete, all agencies on the coast report not only a satisfactory but an extremely prosperous year. During the latter part of December many reported that it would take a series of serious casualties to wipe out the profits for the year.

But shortly after these optimistic reports came the report of the grounding of the str. "Workman" near Rio Janeiro. This steamer sailed from San Francisco with a large cargo of grain and canned goods for London. The cargo was valued at between \$800,000 and \$900,000 and the local underwriters were hit very heavily. It is feared that both ship and cargo will be nearly if not quite a total loss, and what effect this will have on the profits for the year cannot be told at this writing. Many of the agencies close their underwriting accounts about the 10th of December, so that this loss will not appear in the 1912 figures.

The steamer "Newport," which was sunk in the mud at Balboa for nearly three months, arrived at San Francisco on Dec. 25th and discharged the cargo for that port. It is quite certain that the salvage expenses, which were very heavy, will more than eat up what little value remains in the cargo and vessel.

Another heavy loss to the underwriters, for the present year, comes with the stranding and sinking of the Oil Tanker "Rosecrans," which went ashore on Peacock Spit on Jan. 7th, and is reported as having sunk, with no possibility of saving. Up to about a month ago this steamer, which is owned by the Associated Oil Co., was uninsured, but she has had two very bad accidents, and probably in view of this the owners decided to insure. The steamer was valued at about \$300,000, and the San Francisco market is heavily interested. It is reported that the entire crew, with the exception of three, is lost, as the sea was too heavy to allow rescuing crafts and life-saving crews to get near enough to be of any use.

We congratulate the Toyo Kisen Kaisha on its appointment of Mr. Lincoln E. Bemiss as agent for this company at San Francisco. Mr. Bemiss has been with the Toyo Kisen Kaisha for some years past and his many friends rejoice in his new appointment, which all consider he well deserved.

The Pacific Marine Review's office is now located in the Central Bldg. We shall be glad at any and all times to welcome our advertisers, subscribers and other friends.

FINDINGS OF B. C. COURT ON THE ACCIDENT TO THE 8. S. "VADSO."

In the case of the grounding of the S. S. "Vadso" in British Columbia waters the court finds that although the master committed an error of judgment he was exonerated of all blame which is only another proof of how the British Columbia courts in most all cases, and justly so, consider a commander's previous good record before the suspension of his certificate of compentency. The findings of the court follows herewith:

After due consideration of the evidence in this case, the court begs to present the following report and findings:

"The steamship 'Vadso,' owned by the Union Steamship Co., of Vancouver, B. C., employed in general passenger and freighting between Victoria, Vancouver and northern British Columbia ports left Vancouver at 11:30 a.m. on the 12th of October on her usual trip northward the vessel's first port of call being Union Bay, Baynes Sound, Vancouver Island for the purpose of coaling. On the night of the 12th of October at 10:45 p. m. the vessel anchored on account of the dense fog in approximately Lat. 49 28' 4" N. Long. 124 41' 13" W. (See chart Baynes Sound and approaches No. 333.) On the morning of the 13th, at 8 a. m. the fog still thick though seemingly scaling the mas ter felt justified in getting under way with the object of proceeding through Baynes Sound towards Union, the engines under a slow speed telegraph. After duly and carefully considering the courses set by the master and steered we are of the opinion that the master did not realize the strength of the ebb tide which was setting strong , and that his vessel was also steaming. on his port bow, but slowly he did not make provision enough for this leeway in his last course.

"We are of the opinion this was the cause of the grounding, we therefore find that the master, W. Neel, committed an error in judgment but on account of his good record we feel that he should be exonerated of all blame and the court now hands him back his certificate.

"In conclusion the court is of the opinion that a more definite understanding ought to exist between owner and master as to the very important question of sacrificing safety for time and also would accentuate the necessity of masters keeping a night order book in order that no misunderstanding may occur in the issuance of instructions

having reference to the safe navigation of vessels.

"In view that the volume of passenger traffic has greatly increased on the coast during the last few years it becomes of paramount importance that owners should see that rules and regulations issued by them appertaining to safe navigation be carried out and also every facility and support should be given masters in maintaining such dicipline that will tend to minimize public criticism when accidents of this kind occur, and that masters themselves should see that the discipline and routine maintained on board their vessels should be such as to insure the utmost vigilance in

order to contribute to safe navigation."

G. E. L. ROBERTSON, Commissioner.

We concur with the above report and finding.

P. J. HICKEY, Assessor.

WRECKS, CASUALTIES AND MISCELLANEOUS **REPORTS**

"CASCO," schr. Dec. 9th, while lying at pier 8, San Francisco, was run into by the Str. "Hanalei" and suffered considerable damage. It is reported that a mistake in the signals in the engine room was the cause of the accident, but it is also asserted that the strong tide was the cause of the "Hanalei" overrunning her distance.

"HANALEI," str. See "Caso" above. The "Hanalel" suffered considerable damage about the bows.

"CHAS. NELSON," str. While docking at pier 38, San Francisco, on Dec. 13th, ran into the Str. "Enterprise," which was lying at her dock, and suffered some damage. The "Enterprise" was undamaged.

"DORA," str. During a heavy gale went ashore at Seward, Alaska. She has been floated with the assistance of the Str. "Northwestern" and will return to Seattle under her own steam. Damage amounted to about \$3,000.

"ALGOA," Br. str. From Puget Sound for Naples put into Colombo Dec. 14th with boilers out of order.



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"CITY OF TOPEKA," str. From Eureka Dec. 18th for San Francisco, touched the bar heavily while passing out and lost her rudder. Being unable to return, a jury rudder was rigged and she proceeded. She was later picked up by the Oil Tanker "Maverick," belonging to the Standard Oil Co., and towed to San Francisco.

"WELLESLEY," str. From Eureka Dec. 26th for San Francisco, struck on the bar while crossing and returned

to port leaking badly.

"TORRISDALE," Br. bk. From Caleta Colusa for Port land, went ashore on the south jetty at the entrance to Grays Harbor on the night of Dec. 29th, and will probably be a total loss. Captain and crew were safely landed

"WORKMAN," Br. str. From San Francisco Nov. 16th for London, went ashore on the night of Dec. 24th about 15 miles south of Rio Janeiro. Latest reports are that a small part of the cargo has been saved, but that the steamer is likely to be a total loss. The cargo is valued

at about \$800,000, and is largely insured in the San Francisco market. It is reported that the Wheat Tariff Association is heavily interested.

"LEWIS LUCKENBACH," str. During a gale on Jan. 4th in San Francisco harbor dragged her anchors and fouled the Str. "Newport," anchored in the bay. Slight damage to both steamers.

"ROSECRANS," str. While trying to cross the Columbia River bar on the morning of Jan. 7th during a heavy gale and high sea was carried onto Peacock Spit, just outside of the bar, and sank. It is feared that a number of lives were lost. The steamer was valued at about \$300,000 and was insured, partly in the San Francisco market.

"WESTERNER," st. schr., went aground on Columbia River bar Jan. 9th. Last advices received are to the effect that the deckload of lumber was lost and that the schooner is now a derelict.

THE "NEWPORT NEWS"

We extract the following from the Federal Reporter: (District Court, S. D. New York. October 31, 1912.)
1. Shiping (§141)—Damage to Cargo—"Perils of the Sea." Rough seas, although not extraordinary, are sea perils, and, if sufficient to account for damage to cargo properly stowed, the loss is within the exception of such provided by the season of the

perils in bills of lading.

2. Shipping (§ 138)—Damage to Cargo—Harter Act—Error in Management of Vessel. Cargo of iron and wire, stowed in the hold of a steamship on a voyage from New York to Buenos Ayres, on arrival was badly rusted by sea water, which entered the hold through sounding pipes extending from the deck to the bilges, normally closed at the top by brass caps screwed in the pipes. During several days of very rough seas, which washed over the deck and carried away a part of the deck load, these caps became displaced and lost, and water entered the hold to the depth of several feet. The evidence showed that the deck cargo was properly stowed, and did not cause the displacement of the caps, but that they probably became loosened by the straining of the vessel. This, the officers testified, would tend to loosen them, yet it appeared that no inspec-tion was made of them, except when the soundings were taken each morning. There was no doubt that the vessel was seaworthy when the voyage commenced. Held, that the damage was proximately caused by the failure of those in charge to make more frequent inspection during the stormy weather, which was an error in the management of the vessel, and for which she was exonerated from liability under section 3 of the Harter Act (Act Feb. 13, 1893, c. 105, 27 Stat. 445 [U. S. Comp. St. 1901, p. 2946]). In Admiralty, Suit by the Sea Insurance Company and

In Admiralty. Suit by the Sea Insurance Company and others against the steamship Newport News for injury to

cargo. On final hearing. Decree for claimant.
William Harrison, of New York City, for libelants.
J. Parker Kirlin, of New York City, for claimant.
Hough, District Judge. On a voyage from New York
to Buenos Ayres, beginning on February 7th, the Newport News carried in one of her holds a considerable quantity of manufactured iron and wire. This cargo was on the bottom, and on arrival at destination was found badly rusted, while both cargo and ship's sides showed traces of water rising, it is said, as high as six feet above the bot-

On this voyage there was deck cargo of between 500 and 600 barrels of rosin, immediately above the hold containing the injured iron. It is admitted that during the voyage the caps or plugs of the sounding pipes, communication cating between bilges below the cargo and the main deck on which the rosin was stored, had become displaced, and water had poured down these pipes, carrying with it rosin. In result the water was sufficient to cause the injury complained of, and the rosin prevented timely removal by clogging the pipes and the approaches thereto.

In the pipes and the approaches thereto.

The caps or plugs of the sounding pipes are of brass, formed to be screwed into the top of the pipes by means of a key. When in place they are flush with a flange, which is substantially the top of the pipe, and the flange itself rises perhaps an eighth to a quarter of an inch above the deck. By the routine of ship's duty, the carpenier should remove these caps each morning, and take

soundings to ascertain whether the bilges are substantially dry, and it is the duty of the carpenter, under the supervision of the first mate, to replace and screw home the caps after this investigation.

Shortly after the vessel left New York, the carpenter fell ill, and so remained for a considerable time. During his illness the first officer declares that he performed this duty himself. The deck cargo of rosin was contained in barrels, old and of no great strength.

Within twelve hours after leaving port the Newport News encountered heavy weather, which lasted almost without intermission for about two weeks. I do not think that the honesty of the logbook can be attacked, and credence is given to repeated entries such as the following:

"February 8. Strong gale, with violent squall, very high, confused seas, vessel laboring and straining heavily, and shipping huge seas fore and aft, washing part deck cargo overboard. * * * Huge seas swept vessel, breaking away rail of coal bulkhead and port bridge deck, and washing coal overboard."

"February 11. Vessel rolling and straining heavily and shipping very heavy water over all, washing part deck cargo overboard. Shifting boards used for securing deck cargo broken and washed overboard."

"February 15. Vessel pitching and rolling heavily, and shipping very heavy water over all, breaking deck cargo adrift, and washing part overboard."

"February 21. Vessel shipped huge sea, breaking deck

"February 21. Vessel snipped huge sea, breaking deck cargo adrift and jamming steering gear."
Further excerpts are unnecessary. The evidence identi-fies the period when water got into the hold as some hours before 6 a. m. of February 12th, when the log records:

5 tanks and after bilge. Sounded them, and found 1 ft. in No. 4," etc.

Subsequent investigation at Buenos Ayres showed that there must have been far more than a foot of water in the hold, and that the reason why the additional depth was not discovered was that rosin choked the sounding pipes. It is believed (though accuracy is impossible) that water, mixed with rosin, had been pouring down these pipes for some hours before discovery. The hour of discovery and notation in the log, taken in connection with the rest of the evidence, shows that no examination was made of these plugs or caps, except in the morning of each day, when

the mate, or carpenter, or both, made their rounds.

The violence of the sea was sufficient to pick up and throw overboard whole barrels of rosin, of the great weight of which articles judicial notice is taken. The barrels themselves were broken, and the contents spread over the deck, and by the breaking of barrels the compact stowage of the deck cargo was destroyed. By the time comparatively calm seas were reached, some 200 barrels of rosin had been lost out of a total of about 800.

It is evident that this damage was proximately caused by one of three things, viz.: (1) Negligent stowage of the deck cargo; (2) peril of the sea (against which the bills of lading properly protect the ship); or (3) fault or error in the management of the vessel, within section 3 of the Harter Act.



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WHEN WRITING TO ADVERTISERS, PLEASE MENTION THE PACIFIC MARINE REVIEW

It would not be useful to recite the evidence regarding the stowage of the rosin. There is nothing in the case to the stowage of the rosin. There is nothing in the case to contradict the statements from the ship that it was well and sufficiently stowed, securely lashed and shored, and arranged in a seamanlike and customary manner. Openings were left in the deck cargo through which the deck caps could be reached. The man who took soundings lay on his belly on one or more barrels of rosin, and, reaching on his belly on one or more barrels of rosin, and, reaching down with his arm, unscrewed the deck cap, took his soundings, and screwed it up again. It is said by both the master and mate that, when a vessel labors heavily and for a long time in a sea way, it is known to mariners that deck plugs or caps will loosen, though they never personally knew of any case of their not only loosening, but coming completely out and being lost, as happened on the "Newport News." From this libelants argue that it was bad stowage of the deck cargo, so to plant it around the deck plugs as to render it possible for the barrels moving in a sea way to knock out the plugs which might moving in a sea way to knock out the plugs which might become loose.

To this contention I think there are two answers: That considering the stowage, and the weight of the rosin barrels, and the rarity of loose plugs, such a contingency was not to be expected; and (2) that the plugs whose absence did the damage were found to have left uninjured threads in the flanged top of the standpipe, showing, in my opinion, that no severe blows were administered to the plugs as they were loosening and coming out.

I am therefore of opinion that the stowage was not only

good as to the deck cargo, but safe according to human experience for the cargo under deck.

(1) Libelants, next observing that the "Newport News" herself suffered no serious injury, and that no other under-deck cargo received hurt, declare that no peril of the sea within the legal meaning of that phrase has been shown. But it is to be remembered that, in order to find peril of the sea, the losses sustained need not be extraordinary, in the sea, the losses sustained need not be extraordinary, in the sense of necessarily arising from uncommon causes. Rough seas are common incidents of a voyage, yet they are certainly sea perils, and damages arising from them are within the exception, if there has been no want of reasonable care and skill in fitting out the ship and in managing her. Carver (4th Ed.) § 87. The violence of the sea here shown, acting upon a well-stowed deck cargo,

is, if sufficient to proximately account for all that happened, a peril of the sea, within the opinion in "The Frey," 106 Fed. 319, 45 C. C. A. 309.

(2) Of course, it is not admitted by libelants that the (2) Of course, it is not admitted by libelants that the proven peril of the sea does proximately account for the admitted injury. Their contention that the proximate cause was bad stowage has been already disposed of, and the only other cause suggested or shown is a failure on the part of the officers and crew to keep the caps properly screwed down. It is admitted that, if properly screwed down, they were water-tight, and no difficulty is seen in screwing them down properly when lying on the rosin barrels less than an arm's length above the standpipe hole. Those in charge of the steamship say they knew that, not by any action of deck cargo, but by the ordinary straining and twisting of the ship in heavy weather, these plugs were loosened; yet I find in the evidence nothing to show that they were ever looked at more than once in 24 hours. That they did loosen, that they did get completely out, and that their loss was not discovered until after several feet of water had gotten into the hold, is practically admitted, and in my judgment the danger was not discovered sooner only because insufficient inspection was made.

It is concluded as matter of fact that the cargo itself did not and could not start the plugs. If the cargo assisted the plugs in getting out, it did it in such gentle manner as not to injure the screw thread at all. Possibly—indeed, probably—the additional weight of the deck cargo increased the working or writhing of the deck; but that was to be appeared was not in itself dangerous and only required expected, was not in itself dangerous, and only required more frequent inspection and tightening of the deck plugs, which was not given.

It is no answer to this to say that the violence of the seas rendered inspection impossible. Nothing of the kind appears in the evidence; but, if it be true, then the peril of the sea rises to the dignity of the act of God.

It is therefore found that this damage was proximately caused by error in the management of the vessel. "The Silvia," 171 U. S. 462, 19 Sup. Ct. 7, 43 L. Ed. 241. It being abundantly proven that the "Newport News" was seaworthy when she began her voyage, it follows that the libel must be dismissed, but, under the circumstances, without costs. without costs.

FUEL OIL

The Niseco News for November has an interesting and valuable discussion on fuel oil from which the following has been extracted.

While almost any combustible oil whether of vegetable. animal or mineral origin may be used in heavy oil engines, by far the greatest supply is a mineral oil commercially known as fuel oil. This fuel oil is a residue obtained at oil refineries during the process of refining crude oil, and having no other use is sold cheaply as fuel, and until the introduction of the heavy oil engine was only burned under steam boilers instead of coal.

Crude oil was first discovered in the United States in 1858, near Titusville, Pennsylvania. Since that date it has been produced in great quantities, not only in Pennsylvania but in all parts of the country, so that at the present time its refined products form one of the principal items of export from the United States.

In the year 1900 the production of crude oil in the United States was 63,620,529 barrels of 42 gallons, valued at \$75,752,691. In the year 1910 the production was 209,-556,048 barrels, valued at \$127,896,328. The production of crude oil in the United States is 64 per cent of the total world's production, the only other country worthy of consideration in the production of this fuel being Russia, which produces only 21.5 per cent of the world's production.

Crude oil consists of a mixture of a large number of organic chemical compounds, all of which belong to the marsh gas series (C. H. 4). Some of these compounds are light and volatile, while others are heavy and have a very high flash point. The various constituents are separated from the crude mixture by a process known as fractional distillation.

The various products may be generally classed as fol-

Napthas, gasolin	Degrees F.	Specific Gravity.	Density Degrees Baume.
etcLamp oils	104°-302°	.6572 .7286	60-85 32-60
Kerosene cylinde lubricants, oil		.70-1.0	2-32
Grease Residue	·· ···································	••••••	

This table does not pretend to be absolute as defining where one class ceases and the other begins. It is almost impossible to draw the line exactly between the heavier napthas and the lighter lamp oils. Also lubricating oils can be obtained at lower temperatures of distillation than shown in the table, which is given merely as a guide to show the order in which the various products are ob-

The general average of oil produced in the United States shows the following division of products:

	Bbls. of	Per
	50 Gals.	Cent.
Total quantity of crude oil used	120,775,439	100
Naptha and gasoline	11,903,159	9.85
Illuminating oils	38,468,494	31.50
Lubricating oils	10,745,885	8.30
Lubricating grease	138,302	.115
Fuel oils	34,034,577	28.30
Paraffin wax	946,830	.78

The following are given as examples of two commercial grades of fuel oil now sold on the Pacific Coast:

	Stove Fuel Oil.	Star Oil.
Flash	Point 200	195
	U19,700	19,000

Gravity Baume	28.8	24.
Sulphur content	.185%	,53%
Asphaltum	4.%	21.%

PACIFIC MARINE REVIEW

Both of the above mentioned oils have been successfully used in heavy oil engines and official reports received indicate that there was no trouble due to deposits of carbon in the cylinders and exhaust passages. These reports effectually disprove a popular fallacy that oils containing asphaltum can not be used in Diesel engines. The origin of this misunderstanding is probably due to the fact that some of the Diesel engines on the Pacific Coast attempted to use a residue consisting very largely of pure asphaltum. From certain wells in California the crude oil is very heavy, in some cases containing as much as 50 per cent asphaltum. Asphaltum itself is a combustible hydro carbon, and given the proper conditions can possibly be burned successfully in a Diesel engine. With engines, as at present designed, and adjusted, it does not seem to be known to exactly what extent asphaltum may be used. As previously pointed out there are authentic cases on record where 21 per cent asphaltum was used successfully. This is a subject which will probably be investigated in the near future by the government, and by private firms interested in the subject.

The Price of Fuel Oil

The price of fuel oil varies with the grade and locality It may be judged approximately by the price of crude oil at the well. According to recent statistics the average price at the well in the years 1908, 1909 and 1910 were as

	Price	per ba	rrei.
Illinois		52 to	o 60
Kansas and Oklahoma	<i></i>	28 to	o 41
Texas		40 t	o 80
California			

As previously stated much of this oil can be used directly in heavy oil engines. Therefore, taking the average price at 50 cents per gallon, the cost of fuel at the well is only

about one cent per gallon.

The market price for fuel oil delivered at some point on a railroad varies with locality. At the present time, 1912, in San Francisco, it is about two cents per gallon. In the New England States it is three to four cents per gallon. In England it now sells at about 40s. per ton, which is equivalent to about 3.2 cents per gallon. Much of the oil sold in England comes from Texas.

In Germany there is a high duty on oil, amounting to 3.6 marks per 100 hilograms. That is, about three cents per gallon. This makes the cost of fuel oil in Germany about six cents per gallon. In spite of this handicap the German industries have found it economical to use Diesel, instead of steam engines, as shown by the very large number of the former now in use in Germany.

Tar Oil. Due to the high cost of crude oil in Germany, the Maschinenfabrik Augsburg-Nurnberg has for many years successfully used heavy crude bituminous tar oil. This is obtained as refuse from gas works, and by a patented process is reduced to a state suitable for use in the Diesel engine. At present over 300,000 tons of this fuel is produced annually in Germany.

At the present time, although several hundreds of thousands of horsepower of Diesel engines are in use, they

consume less than 1/500 of the world's production of oil.

Extent of Oil Resources. The full extent of the world's resources are not yet known. Many scientists state their convictions that the total store of oil will be found to exceed the ultimate supply of coal. In certain countries, South America and China, oil is known to exist, but little development work has taken place. The vast stores of Texas and California have been worked for a comparatively few number of years, and new wells are being continually drilled in those states. As an example of the large amount of oil already in sight in California, the following is quoted from the report of Director George Otis Smith, of the U.S. Geological Survey, to the Secretary of the Interior.

On the subject of the period of possible denomination of the Pacific fuel market by California oil, no more authoritative data are available than the discussion of the subject by Arnold and Day of this Survey in 1909, and by M. L. Requa, a California mining engineer, in 1910 and 1911. I will therefore practicaly confine myself to the summary of these statements, which are found in the Conservation Commission report by Dr. Day, reprinted in the United States Geological Survey Bulletin 394, and in an address by Mr. Requa before the Mining Association, University of California (privately printed), and in another address be-fore the San Francisco meeting of the American Institute of Mining Engineers (not yet published).

The importance of the California field is seen from the statement by Day; quoted by Requa, that this one state is to be credited with one-tenth of the total area of oil land in the United States, with over one-third the present production, and also with a total quantity of oil equal to one-half the minimum and one-third of the maximum estimated resources of the whole United States. These minimum and maximum estimates by the United States Geological Survey for California are 5,000,000,000 barrels and 8,500,000,000 barrels, respectively, and Mr. Requa believes 8,500,000,000 barrels, respectively, and Mr. Requa believes "the maximum will be unquestionably in excess of 8,500,000,000 barrels for California." Apparently he arrives at this conclusion by computing for the productive territory of 850 square miles, or more than 500,000 acres (Survey estimate), a productivity equal to that of the territory already producing, which calculation yields an estimated "total possible recovery of 11,000,000,000 barrels, with possibilities even beyond this quantity."

Lubrication and Lubricants

In common with all engines, the Diesel type requires proper lubrication. In certain designs of Diesel engines special care must be observed, due to the relatively high pressures and speeds of the bearing surfaces.

Three general systems are employed. In comparatively small slow speed engines drip lubrication has been found satisfactory. In moderate sizes ring oilers are used successfully. In very large engines, and in high speed engines, forced lurbication is almost universally used. In the high speed marine engines the pressure delivered by the force feed lubricating pumps is generally about twenty pounds. The oil is forced through an axial hole in the crank shaft, channels drilled through the crank webs, and pounds. through the crank pins, and a hole through the axis of the connecting rod, up to the wristpin. Openings at each bearing into this channel provide ample and certain lubrication. In engines where the piston head is cooled by the medium of circulating oil, an incidental advantage is obtained by having the cool oil in large volume circulated through the crank shaft, as it carries off some of the heat generated in the bearings.

The consumption of lubricating oil varies, from .005 pint per h. p. hour in slow speed engines to .02 pint per h. p. hour in high speed engines. When the proper amount of lubricating oil is used the bearings will run cool and the exhaust will be clear. Whenever the exhaust shows a bluish white appearance it is a sure indication that an excessive amount of lubricating oil is being used.

Grades of Lubricating Oil. There are many different grades of lubricating oil on the market. All of these are not suitable for use in Diesel engines. It is advisable at first to always use the make of oil recommended by the firm supplying the engine.

Physical Tests and Characterists of lubricating oil are of some assistance in determining its suitability. The following table shows approximately certain requirements of Oil for Cylinders. Oil for Bearings.

10% acid 10%

No residue

All lubricating oil should be free from acid. The requirements contained in the above table are explained in detail as follows:

Viscosity is the degree of fluidity in comparison with water. An oil, for instance, that will require nine times more time to flow through an opening, than water would require to flow through the same opening, is said to have a viscosity of two.

Resistance to Cold means the effect of cold on the physical properties. The oil must still flow freely at 20° F. and it must not coagulate at a temperature higher than

The Flash Point indicates the temperature of the oil, at which the vapors generated (by heating) will flash up or burn when approached by a flame.

All lubricating oils contain substances that can be destroyed by Concentrated Sulphuric Acid, even after they have been purified with chemicals. The smaller the percentage of such substances contained in the oil, the better will be its quality

Lubricating oil dissolved in Benzine must make a clear solution, without any residue.

Lubricating Oil Filtering Plants have been found economical. As is well known a certain amount of oil drops

H 86

1.00 to 200 to 2

into the bottom of the bedplate, and in the course of time accumulates and collects sediment, and perhaps some water. In the usual plant the oil is first drained from the bedplate to a settling tank where the water and sediment settle to the bottom and are drained off through a cock. The oil is then forced by a hand pump to a tank placed when possible 30 to 40 feet above the level of the floor. In cases where such height is not available the oil is pumped to a tank in which an air pressure of from 15 to 20 pounds is maintained. From this tank the oil flows under pressure to the filter, where it is forced through a number of layers of filtering material. The filtering material must, of course, be cleaned and renewed from time to time. The purified oil from the filter is then mixed with fresh oil and again used in the engine.

It is reported that the E. J. Dodge Co. and the Olson-Mahony Co., both of San Francisco, have formed a merger, that is, the Olson-Mahony Co. has agreed to retire from the Portland field, leaving it entirely to the E. J. Dodge Co., in return for which the Dodge Co. relinquishes a portion of its other business, to the benefit of the Olson-Mahony Co.

The Pacific Marine Review takes particular interest in the large shipment of high grade teak wood in special long lengths just received by the hardwood lumber firm of Messrs. Ehrlich-Harrison Company, located at Railroad avenue south and Connecticut street, Seattle, Wash.

It is hardly necessary to comment upon the unsurpassable quality of this standard wood for ship decks, rails and sundry usefulness on shipboard, which has in the past been more in use on foreign vessels. However, since the Panama Canal Act permits the importation of shipbuilding

materials free of duty, with small restrictions, we will in the near future unquestionably see this fine and useful hardwood more generally used on ships under our flag.

M. E. B. A. ELECTS NEW PRESIDENT

We congratulate the Marine Engineers' Beneficial Association on its election of Mr. A. McGregor as president. Mr. McGregor is well known in shipping circles on the Pacific Coast and ably represents the Puget Sound Machinery Depot, of this city, as marine and stationary engineer. This company is in high esteem as manufacturers of and dealers in all kinds of machinery and engineer's supplies, making marine and stationary pipe work a specialty. They have some of the best agencies on the Pacific Coast for material constantly used in marine work, enabling their machine and pipe shops to work to their utmost capacity.

Moore and Scott's Improved High Pressure Oil Fuel System is one of the many important agencies held by the Puget Sound Machinery Depot. This system has again proved a great success on the San Juan Fishing and Packing Company's steamer "Starr," built by J. F. Duthie and Company of Seattle. Mr. McGregor personally supervised the working of the furnace on the trial trip of the steamer, with all credit to his firm as well as the builders and owners of the vessel.

Office Depot Quartermaster, Seattle, Wash., Dec. 28, 1912. Sealed proposals will be received here until 11 o'clock A. M., Jan. 28, 1913, for repair work and installing new boilers for U. S. Cableship "Burnside." For information and proposal blanks address W. H. MILLER, Colonel, Q. M. Corps. D. Q. M.

COMMERCIAL MOVEMENTS ON THE PACIFIC COAST

COASTWISE AND FOREIGN COMMERCE (WASHINGTON, MONTH OF NOVEMBI Principal Foreign Shipments	
Flour, 108,321 barrels	\$ 435,963
Wheat, 738,226 bushels	600,002
Cotton, raw, 8,174 bales	489,270
Tobacco, 148,330 pounds	17,800
Coal, bulk, 12,266 tons	52.863
Machinery, 413 packages	37,735
Lumber, 4,018,855 feet	59.049
Sait fish, 2,149 packages	12.300
Domestic and sheeting, 580 cases	34.470
Box shooks, 14.323 bundles	25 208
rertilizer, 12.450 sacks	19 500
raranne wax, 6.064 packages	52.752
Sawing machines, 4.634 packages	52 752
Steel angles and bars, 8.630	52.539
Miscellaneous to British Columbia	52 016
Miscellaneous to Japan, China, Manilla, Sou	ıt h
America and Europe	251,358
Total foreign shipments	
Principal Coastwise Shipments	,
Flour, 13,769 barrels	
Lumber, 6,655,475 feet	\$ 58,719
Coal, 10,135 tons	75,715
Wheat, 204 026 bughola	45,607
Wheat, 204,026 bushels.	163,128
Smelter products Feed. 1 172 tons	103,031
Feed, 1,172 tons	29,875
Shingles, 14,496 bundles Miscellaneous to Alacks	7,250
Miscellaneous to Alaska	
The second telephone is a second seco	29,193
The to Camornia, Honorata and N. I	199,480
Total Coastwise shipments	199,480
	199,480

Foreign Receipts	
British Columbia\$	257,923
China and Japan	2,403,859
South America	51,000
Total foreign receipts\$2	2,702,782
Shipping Record	
Nov.,	Nov.,
1912	1911
Deep sea arrivals, number 146	91
Deep sea departures, number	92
Inward registered tonnage, tons 249,733	195,984
Outward registered tonnage, tons 252 012	198,977
Inward cargo tonnage, tons	46.123
Outward cargo tonnage, tons 96,305	70,158
	10,100
ALASKA PACKERS' ASSOCIATION 1912 SALMON	D 4 O 14
	PACK
Red King Coho Pink Chum	
Talls Talls Talls Talls Talls T	otals
Bristol Bay 677,838 5,112 7,518 51,904 7	42.372
Central Alaska [183.568] 5.461[5.716] 42.97c] 0.476] 6	40,079
S. E. Alaska 6,097 90 5,876 139,132 18,971 1	70,166
Total, Alaska 867,503 10,663 19,110 233,912 21,429 1,1	
	50,162
Grand Totals 867,503 10,663 30,221 233,912 22,353 1,20	02 779
Sockeye	02,113
	Flate
Puget Sound	3.133
Canned Salmon	,
Alaalaa Ca	ses
Alaska	
Puget Sound	0.162
Total	
Salt Salmon	2,779
_	_
laska Bar	
	3,988

.....

Total Coastwise receipts...... \$ 862,523

IE REVIEW

40	PACIFIC	MARIN
COMMERCIAL MOVEMENTS Compiled by Portland Chamber	of Commerce.	ORE. Fr Ge Ita
Lumber Exports from December (Foreign	Since January 1, 19	No Sv Er
Feet Value 12,097,695\$142,851 (Domestic	Feet \\113,047,168\$1,	/alue Sc ,258,773 Ca
12,005,355\$138,062 Wheat Exports fro	169,453,612\$1, om Portland	H.
(Foreign Bushels Value 1,572,068\$1,302,556 (Domesti	Bushels 7,340,194\$6	Ja Value Pi ,263,816 O
552,801453,297 Flour Exports fro	4,822,382\$4 m Portland	,183,493
(Foreign Walue 9,000\$31,497 (Domest	Barrels 650,426\$2	1.
24,016\$93,662 Barley Exports fr	364,549\$1	Y
Bushels Value (Foreig	Bushels	Value A
246,766\$176,479 (Domest 377,926\$188,963	1,250,578 tic) 600,522	L L
Tonnage Entered December, 191286 ve	at Portland	
December, 191177 ve	ssels106, from Portland	921 tons
December, 1912	ssels113, ssels108,	580 tons 669 tons
Principal Foreign Im	S	ince Jan.
Cement, barrels	December	1, 1912 12,600
Coal, tons	ages 1,472	8,312 23,174
Firebrick, tons	1,376	3,422
Hemp, bales		8,817 7,247
Peanuts, bags		10,382 1,642
Provisions, packages	518	13,617 9,174
Sulphur, tons		6,217 · 1,720
Tea, packages Principal Domestic Impor		2,554 Water
Asphaltum, barrels		97,084 207,236
Cement, sacks	213,730	3,278,331 12,982
Coffee, sacks Electrical goods, packages		15,558
Grain bags, bales	1,523	3,084 20,988
Iron nackages	3,620	106,245
Leather and hides, rolls	306	4,690
Lumber, M feet		987 4,519
Matting, rolls	3	925
Merchandise, tons	2,436	
Miscellaneous, packages Oil, barrels	361,534	
Paints and oils, packages		
Plaster, sacks		
ColmAn cases	0 ,055	85,363
Solt sacks	19,829	
Sugar, sacks		
OFFICIAL STATEMENT OF DISTRICT OF LOS AN	IGELES, CAL., DU	INESS OF RING
Collections	OVEMBER, 1912	\$ 79,819.14
Imports		247,971.00
Exports		008.00

Austria-Hungary \$ 2,136 Belgium 13,081

Imports and Exports by Countries

Imports. Exports.

\$.....

France	21,269	******
Germany	54,262	*******
taly	16,458	•
Norway	10,248	
Switzerland	5,455	*******
England	37,299	
Scotland	6,396	
Canada	5.759	583
Mexico	3.862	
Chile	17.331	
Hongkong	7,005	*******
Japan	30,624	75
Philippine Ialands	•	
Other countries		
-		
Totals	\$247.971	\$65 8
		·
Principal Imports		
F'ertilizers		\$ 64,938
Wines and liquors, 16,951 gallons		22,021
Lumber and wood manufacturers		12,235
Chemicals and drugs		. 11,841
Vegetables, prepared		. 11,312
All other articles		. 125,624
Total		.\$247,971
Duitable	\$146,340	
Free of duty	. 101,631—	-\$247,971
Movement of Vessels Engaged in F		
	orong	
Entered—	Not	Tonnage
No.		
2 American steamers		3,009
1 German steamer	•••••	1 193
1 Norwegian steamer	ç	3 004
i Danish steamer	••••••••••	0,001
		12 008
5 Total		12,000
Cleared—		2 163
1 American steamer		2,100

PRODUCTION OF LUMBER, LATH AND SHINGLES

The reported production of lumber in the United States during the calendar year 1911 by 28,107 mills was 37,003,207 M feet board measure, as against 40,018,282 M feet board measure reported by 31,934 mills in 1910; 44,509,761 M feet reported by 48,112 mills in 1909, and 33,224,369 M feet reported by 31,231 mills in 1908.

While the industry of lumber manufacture is widely distributed throughout the United States, a production during the calendar year 1911 having been reported from every state but one, namely, North Dakota-it is interesting to note that nearly 36 per cent of the total cut was reported from the five states of Washington, Louisiana, Mississippi, Oregon and North Carolina, ranking in the order named. Furthermore, it will be observed that two of these five states are located on the Pacific Coast and three in the South, which regions have in recent years become the principal centers of lumber production in the United States, their combined output in 1911 forming 68 per cent of the total cut for that year.

The reported cut of softwood lumber in 1911 was 28,902,388 M feet board measure, or 78.1 per cent of the production from all woods, while that of hardwood lumber amounted to 8,100,819 M feet board measure, or 21.9 per cent. The slightly larger proportion of the total production supplied by softwoods during 1911 as compared with the figures for the preceding year is a logical result of the drift in the lumber industry to regions which are chiefly coniferous or softwood.

The five leading species cut in 1911 were yellow pine, Douglas fir, white pine, oak and hemlock, ranking in the order named, the aggregate output from these woods being 26,835,285 M feet, or 72.5 per cent of the total production from all species. Yellow pine alone supplied 12,896,706 M feet board measure, or 34.9 per cent of the total, while oak, the leading hardwood, contributed 3,098,444 M feet, or 8.4 per cent.



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8. 8. "NIRGINIAN"—12,000 tons, twin screw.
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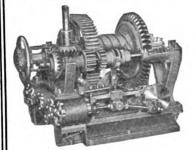
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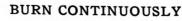
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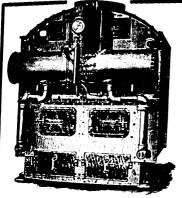
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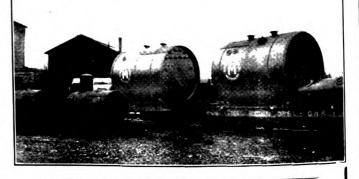
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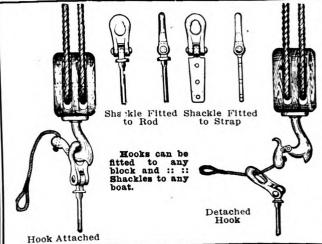
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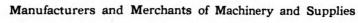
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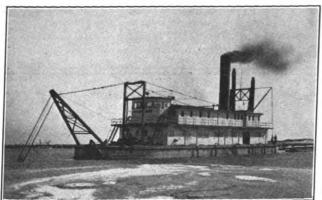
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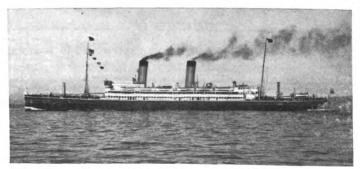
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PACIFIC MARINE REVIEW

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PANAMA CANAL POSSIBILITIES

BY E. PRANCKE

A Herculean task, the world's greatest engineering feat, attained by American enterprise, ingenuity and pertinacity, under the excellent and admirable leadership of Colonel Goethals and his efficient staff, will with the end of this year have become an accomplished fact.

Viewed by the world from every angle of canal approach, this magnificent achievement, nearing successful and rapid completion in the immediate future, must naturally revolutionize to no small extent in time to come the whole trade of the world as well as the modes of commercial conditions and its travel.

Ancient and well ordered ways of the old world system will be replaced by the hustling methods of the new. The tide of general prosperity, great though it be, has not yet reached the high water mark and the fillip which it will receive with the opening of this great ocean highway promises to carry the world's trade to a point which has never before been reached. Money, the all productive, will be employed in new channels. Primeval markets will expand in usefulness and productiveness. Goods heretofore shipped through primitive ports which were prevented from modernizing due to lack of capital and the excessive cost of transporting modern time and labor-saving machinery, so essential to fair competition, will eventually, with the expected influx of immigration, advance to prominence in rank and file with other shipping centers of the world. The more one studies this subject, the more imperative the fact appears that the ports of the Pacific Coast of the United States should be equipped with the most perfect and modern appliances to properly handle the expected increase in oversea commerce, which must result with the opening of the Panama Canal. Thus far we have built this great canal for the merchant fleets of other, in this respect, more progressive nations, our coastwise shipping and our Navy. Our pitifully small Merchant Marine, continually hampered as it is by a series of impractical and most burdensome laws, is receiving blow after blow, impeding its just and desirable expansion and which is so disheartening to every genuine patriotic American. However, the nation at large will witness in the canal procession of wonders of naval architecture under foreign flags a most humiliating object lesson and our people through very shame will some day vigorously insist on the creation of an American fleet of offshore steamers and then "only too late." All possible inter-oceanic transportation ventures necessitating increase of tonnage will be well taken care of by foreign shipping enterprises and we will not only continue to annually pay \$300,000,000 to foreign bottoms but after the canal is opened a very much larger sum will have to be paid to vessels of other nations for carrying our passengers, mails and the ever increasing quantities of American products and their necessary exchange. Favored by more liberal navigation laws, these maritime nations have in the abeyance of any American merchant fleets justly taken predominant possession of the Atlantic and Indian Ocean trades. The Pacific Ocean stock is, as it were, fast selling out to Japan and the American nation is now on the verge of being absolutely confined to a non-competitive coastwise shipping trade. Stagnancy, prohibitive as it is in all walks of life, is particularly so in ocean commerce and while our own progress in the creation of an American Merchant Ma-

rine on the seven seas is thus deplorably impeded, the assurance of increase in ocean commerce to and from the Pacific slope under foreign flags is doubly assured. These Panama Canal possibilities have long since aroused the Latin-American republics to the south of us from "dolce far niente" in the improvement of their ports with at least modern appliances for the handling of heavy traffic. What have the United States ports on the Pacific done so far in this direction? Are we earnestly preparing to take proper care of the traffic we expect to come to our shores under the flags of foreign nations, which traffic no one can deny is beneficial to our ports and transportation connections from these ports inland? In the study of "Port Facilities" as published by the Hydrographic office of the United States Navy for 1912, I find that these southern republics have made wonderful strides in equipping their ports, which from an American viewpoint are perhaps considered primitive, with such modern appliances essential for the increase of rapid handling of heavy traffic, a vivid proof of preparatory measure on their part and indifference on ours.

Antofagasta, Chile, has its port equipped with hydraulic cranes; Coquimbo, Chile, has 21 ton cranes on its mole for rapid work; Iquique, Chile, has cranes on its wharves; Mollendo, Peru, has cranes from 2½ to 10 tons capacity; Port Vilos, Peru, has two small and two big cranes, and as one goes southward similiar facilities are noticeable. Turning from San Diego northward, however, no data of equipment for loading or unloading cargo in an up-to-date manner can be found in the document of 1912 published by the U. S. Navy Hydrographic office.

Mr. De Putrun Gliddon in his ably written article under the heading of "Panama Possibilities," as published in "The World Traveller de Luxe," makes reference to the same subject which is of such dominant moment that it can not be considered too thoroughly and from too many angles nor can too much proof of its importance be presented to the readers of the Pacific Marine Review.

I am quoting the following from Mr. Gliddon's article, which is self explanatory:

"Professor John Paul Goode of the University of Chicago, in a most valuable monograph on the port of Chicago, said that 'a port is a pump,' the efficiency of which is high in proportion as the stream of liquid commerce it delivers is great and the cost of operation is low.'

"That's the professor's pump.

"At a recent banquet of the Pasadena Board of Trade, Rev. Robert Burdette, sprung one of his philosophical, whimsical witticisms upon his fellow diners. He was talking about the Panama Canal opening, etc., and mentioned San Pedro (the port of Los Angeles) and reminded his hearers that Los Angeles has annexed a shoe-string strip between that town and San Pedro, for the purpose of having a harbor in the city of Los Angeles. 'But,' continued Mr. Burdette, 'if the Los Angeles people had laid a good pipe-line from the business center of the city to the sea, and then had sucked as hard as they blow they could have pulled the Pacific Ocean up to Los Angeles and had a harbor right in town.'

"Nestling in the midst of Burdette's whimsical witticism is much sound philosophy. In the center of the smile there



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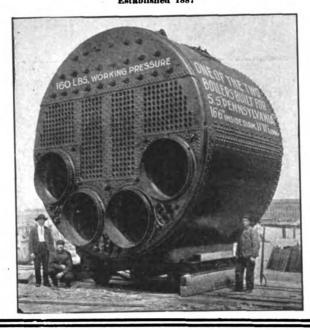
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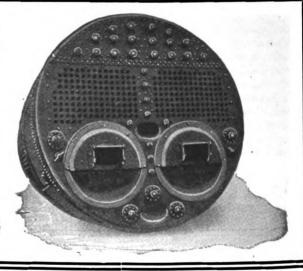
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is a sermon and it is a homily that should be preached to or read by all the people on the Pacific slope.

"Suction not blowing is what builds up ports, and suction not blowing works the professor's pump.

"Blowing is easy, but pumping means work, and there has been too little pumping. We have (to sell real estate) blown about the enormous commerce that will come through our ports. My own home town, Los Angeles, has contributed liberally to the big wind. Yet, as I look at the report of the United States Custom House, for the month of November, 1912, I find, to my mortification, that the total value of the exports from Los Angeles to foreign countries, including Canada, was the petty sum of \$658, and \$583 worth of this went to Canada, the balance (\$75) to Japan.

"Cargo ships cannot afford to call at ports to unload a few score or even hundreds of tons of freight and carry away a hatfull of cargo. This is a little infant-class lesson in shipping matters that should be learned by not a few of the seaport people on this Pacific slope, as well as elsewhere. During the past several persons have asked me whether it is not probable that the adoption by our ports of the Bush terminal plan would fill the required needs for up-to-date equipment for the rapid handling of inbound and outbound cargoes.

"It is stated that such plans are under consideration in Seattle, Oakland, San Pedro and San Diego, although I believe that in the case of Oakland the plan has passed the consideration stage and is in the hands of business men who are too active to waste much time in contemplation.

"To understand how far this plan would be of service for any of our ports it is well to know what the Bush terminals really are.

"The basic idea is not that of providing ships with places for discharging or loading cargo rapidly, as some suppose, but this: That the factory should be near, or better still, right at the shipping terminals. It is an effort to supply factory space and transportation to and from this factory space in such a manner as to, as far as possible, avoid all trucking, reloading and the delay and cost they involve. The crowded streets of New York City and the peculiar shape of the city itself suggested the need of some such plan as the Bush terminals.

"Everything revolves around that idea, and those who believe in the terminal doctrine are of opinion that the factory sites of the future will be at the harbors along the waterfronts.

"As to the Bush terminals, in South Brooklyn, N. Y., they consist, first of all, of 7 steamship piers, each pier being 1,340 feet long, 150 feet wide and being placed 270 feet apart. Railroad tracks run the full length of the piers, there being warehouses on each pier for receiving and storing freight.

"Beginning with the shore end of the piers and extending for a considerable distance back is a great space upon which have been built eight model loft buildings, which are leased to manufacturing firms of various kinds. These lofts are built of concrete, are six stories in height, and each loft building has 300,000 square feet of floor space. They are divided into rentable spaces of such dimensions as are required by the lessees.

"Surrounding these loft buildings are railroad tracks and, still further inland, are railroad yards that have capacity for caring for 1,500 freight cars.

"Dock Commissioner Tompkins of New York City, in his report for 1910, stated that the Bush terminals are the 'only modern waterfront improvement in New York City.' And yet if you look over the list of the equipment given by the Bush Terminal Company for the information of its customers, you will find in the machinery of hustle only one crane. Compare that poor, lone crane with the equipment of the ports of Hamburg, Rotterdam, Amsterdam, Liverpool and London and you will realize that the modernness is not quite what one would expect.

"Considering the financial side of this undertaking, I notice that the Bush Terminal Company has \$5,000,000 of stock, common and preferred, with two sets of mortgage bonds, one at 4 per cent and one at 5 per cent, the total of which is \$9,952,000. So you see that a plan of this kind runs in to quite a few millions of money.

"That it is of great value in cutting down the cost of manufacturing by reducing the expenses of transportation of raw and manufactured materials to and from the factory, is quite plain, provided that the rents, etc., charged by the terminal company are moderate. To have such a concern in a port would enable the manufacturer located in the terminal buildings to make his product at closer figures than his competitor who was less favorably located, and so might help the export trade of that port, although conditions such as labor, rents, etc., if more favorable elsewhere would completely upset one's calculations.

· "Such plants as these are useful to supplement the regular port equipment, but do not supply the unquestioned need that exists for providing ships with proper wharfage or dockage and equipment for rapid service.

"Looking again at Professor Goode's figure of the port as a pump we have seen that by modern, labor and timesaving methods the cost of operating the pump can be made low and so have a pump of high efficiency, but, as yet, we have not seen how the 'stream of liquid commerce it delivers' can be made great. To do so we shall have to consider such factors as the interior country adjoining the port and the transportation thereto, the value of great rivers to a port, e. g. the magnificent rivers that flow into San Francisco bay, the importance of repair works, the imperative need for wide-awake hustling merchants who reach out for overseas business; the necessity for adequate banking facilities, of international ships. And in order to better understand our subject we naturally have to consider the question of the cost of operating an American ship as compared with those flying other national flags, and, maybe, a few other things that we must look into and understand before we take full advantage for ourselves and our ports of Panama possibilities."

Deep Sea Soundings

- (a) How many feet constitute an average sea depth?
- What is the obstacle to obtaining certain unmeas-(b) urable depths of the ocean?
 - What is the temperature at the bottom of the ocean? (c)
- How is the measure of the pressure of each thou-(d) sand feet calculated?

As answered by the Hydrographic Office-The mean depth of the entire ocean is about 2,100 fathoms. This is for the entire ocean surface. The average depth of the Atlantic and Pacific oceans, however, is about 3,000 fathoms.

- (b) There is no obstacle in obtaining the greatest depths with the most approved sounding apparatus. The greatest difficulty is in keeping the ship in a steady position so as to get an up-and-down cast. Wind and sea have a tendency to make the vessel drift, and this has to be counteracted by the use of the engines.
- (c) The minimum temperature obtained by the U.S.S. "Nero" was 35° F. The temperature fell rapidly from the surface to 600 fathoms depth, then slowly to 2,500 fathoms, when the minimum temperature of 35° F. was obtained: then it seemed to increase slowly, and at the maximum depth 36° F was obtained.
- (d) A depth of 32.2 feet of ocean water is equal to the pressure of one atmosphere, 15 pounds to the square inch. From this the pressure at any depth in the ocean may be



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PREFERENTIAL DUTY AN AID TO AMERICAN SHIPPING

(Continued)

Congressman Steven B. Ayres of New York, member of the Committee on Merchant Marine and Fisheries, writes to the Pacific Marine Review, under date of Washington, D. C., January 30th, 1913, as follows:

"I have read with interest the January issue of the Pacific Marine Review and have been especially attracted to the article by Capt. Francke on preferential duty as an aid to American shipping. My own study of the question has led me to the conclusion that a preferential duty in the indirect trade will accomplish a great deal for us. Just to make a start toward its realization I have introduced a bill, copy of which I enclose to you.

"Yours very cordially, "STEVEN B. AYRES." We are reproducing the bill herewith:

A Bill to Restore the Foreign Merchant Marine.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled: That every vessel not of the United States coming from her own country to a port of the United States but bringing cargo of which a portion larger than 10 per cent in value has been produced in another or foreign country, and every vessel not of the United States coming not from her own country but bringing cargo in whole or in part not produced in her own country, shall be deemed to be engaged in indirect trade.

Sec. 2. That upon all foreign productions, goods, wares, or merchandise brought to a port of the United States by a vessel engaged in indirect trade there shall be charged, in addition to any duties otherwise provided by law, the following advalorem duties: For the first year after the enactment of this law 1 per centum ad valorem; for the second year after such enactment, 2 per centum ad valorem; for the third year after such enactment, 3 per centum ad valorem; for the fourth year after such enactment, 4 per centum ad valorem; for the fifth and subsequent years after such enactment, 5 per centum ad valorem.

Sec. 3. That this act shall take effect immediately.

Quite recently Mr. Ayres delivered the following eloquent address in support of the bill he is introducing in the House. We consider that this address clearly sets forth in a most sincere and commendable manner the maritime affairs of our country as they exist today, actually suggesting a remedy. If we had more men in the House of Representatives of the type of Mr. Ayres, Mr. Sulzer, Mr. Alexander, Mr. Humphrey, Mr. Underwood and a few others our merchant marine wouldn't be in the deplorable condition we see it today. Great things are expected from the next session, and as Mr. Ayres states, he "has made a beginning," which, after all, is a great deal when one considers.-Ed. Note.

"We can not cut down the wages in American shipyards, because the employees would immediately go into other and better-paid industries.

We can not pay subsidies to our merchant marine. The temper of the time is justly and firmly opposed to such economic favoritism.

We can not safely create discriminating duties in our direct trades or lay discriminating tonnage or port charges. Such laws would conflict with all our treaties and lead to reprisals on the part of other nations.

But there are three courses of action open, either of which, if adopted, would enormously stimulate our foreigncarrying trade. These are:

First. To charge no tolls through the Panama Canal to our coastwise trade, and to establish ports of entry in the Canal Zone.

Second. To establish discriminating duties upon the indirect carrying trade.

Third. To establish an interoceanic commerce commission to regulate water-borne traffic in which we are interested, just as our Interstate Commerce Commission regulates our transportation on the land.

Let us consider these projects in detail to see if either or all of them should be adopted.

VI. Influence of the Panama Canal

By virtue of our purchase of the Canal Zone from the Republic of Panama we became seized of sovereign rights in that territory, subject only to the conditions of the treaty by which it was acquired. Article 3 gives to the United States all the right, power, and authority that the United States would possess if it were sovereign. Article 2 excepts from the operation of the grant the city of Panama on the Pacific side and the city of Colon on the Atlantic side, with the harbors adjacent thereto. These ports remain under the sovereignty of the Republic of Panama and are therefore foreign ports.

Notwithstanding this exception, however, the rights of the United States as sovereign undoubtedly extend to the creation of new ports. These new ports which may be established are undoubtedly the ports referred to in the first and second lines or Article 9 of the treaty. The cities of Panama and Colon and their harbors being reserved to the Republic of Panama, and that republic agreeing in Article 9 specifically with reference thereto, the agreement of the United States above referred to, in the first and second lines of Article 9, and again in the seventeenth and eighteenth lines of that article as to "ports at either entrance of the canal and the waters thereof," and, again, "such ports" must relate to new ports thereafter to be established. The United States, having the right to establish new ports, would undoubtedly have the right to regulate them, so that such regulation be not in conflict with the remaining provisions of the treaty.

Shipment of freight from New York through the canal to the city of Panama would be a foreign shipment, because the city of Panama is within the sovereignty of the Republic of Panama. The same may be said of a shipment from San Francisco to Colon. But a shipment from a port of the United States to any other port on the Canal Zone not included in the limits of these cities or their harbors would be coastwise business of the United States.

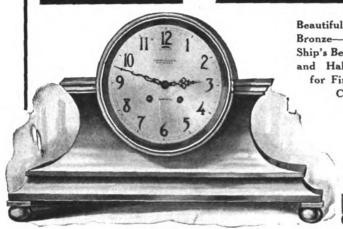
By referring to the map of the Canal Zone dated June 30. 1911, accompanying the annual report of the Isthmian Canal Commission it will be found that the limits of the cities and harbors of Colon and Panama are indicated by yellow boundary lines. At the harbor of Colon the greater portion of Limon Bay, which is immediately contigous to the canal entrance, is outside the limits of Colon Harbor. Limon Bay thus affords the site for a port and harbor of the United States to the landward of Colon and Colon Harbor, that portion of Limon Bay available for a harbor of the United States being about two miles and a quarter one way by three miles the other. A 500-foot channel has been cut through Limon Bay directly to the entrance of the canal.

The limits of the city of Panama and its harbor are entirely to the southward of the entrance to the canal on the Pacific side, and the closest approach of these limits to the canal is 1 mile to the southward thereof as the crow flies, but by reason of the existence of the breakwater is practically 8 miles distant from the canal entrance. Therefore there is abundant room for a port and harbor of the United States at the mouth of the canal on the west coast.



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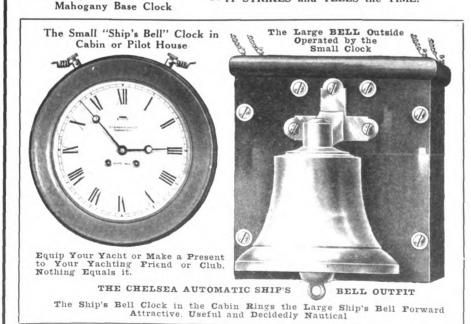
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Shipments from any port in the United States to a port of the United States located at either end of the Canal Zone would be coastwise. Balboa, lying on the western side of the canal, is an existent port of the United States, and Mindi, on Limon Bay, on the east side of the canal, may undoubtedly be created into a port in law, as it already seems to be a port in fact, of the United States. Shipments from any part of the United States either to Mindi or Balboa would be coastwise. If such shipments traverse the canal, being coastwise, they would go through free under the provisions of the Panama Canal bill.

Section 4322 of the Revised Statutes of the United States provides:

"The collectors of the several districts may enroll and license any vessel that may be registered upon such registry being given up, or may register any vessel that may be enrolled upon such enrollment and license being given up."

If there were collectors at these ports (the ports being within a collection district) the existing law governing the coastwise trade would permit a vessel to proceed on enrollment coastwise from a port in the United States through the canal and to either Mindi or Balboa, and, under section 4322, exchange her coastwise enrollment for a registry and then proceed foreign, with the freight with which she was laden reconsigned at one or the other of the said ports for a foreign port. It is apparent that this result may be accomplished if officers are designated by the President having the power at Mindi and Balboa to exercise at said ports the power of a collector of a customs district with respect to the shipping at such ports so far as the same are not in conflict with the treaty between the United States and the Republic of Panama.

Coastwise vessels of the United States being exempt from the payment of tolls, and the right to change from an enrollment to a registry being a privilege reserved to every coastwise vessel, the result would be that all cargoes carried in vessels of the United States from ports on the eastern coast of the United States to ports on the west coast of South America and to all Asiatic ports would be given a rate differential equal to the amount of the tolls over cargoes carried from and to the same ports in vessels of any other country. A cargo of 6,000 tons, for example, would therefore pay a freight rate of \$7,200 less if carried in a vessel of the United States than if carried in a vessel of any other country. Similar benefits would inure to all cargoes from ports on the west coast of the United States to all ports of Europe, Africa, and the east coast of South America.

It is apparent that a differential of such magnitude would soon compel all our shippers to use vessels of the United States in preference to vessels of other countries, as they are now doing, in all the direct trade of the United States using these routes. The present freight rates between these ports would be reduced and benefit would come to all shippers and consumers in the United States in accordance therewith.

Doubtless it is fear of such a policy being adopted by the United States that has led Great Britain to make so earnest a protest against the remission of tolls to our coastwise vessels through the Panama Canal. And doubtless her spokesmen would protest such a policy as being bad faith on our part.

Great Britain has by every means within her power since the adoption of our Constitution endeavored to obtain control of our carrying trade. In the early days, when we were weak, she made war upon us. Since that time, while we have been giving attention to the development of our land resources and have neglected the sea, she has obtained and now retains control of our foreign carrying trade by all forms of combines, together with pooling and

rebate systems—unlawful in the United States. The construction of the Panama Canal has placed in our hands a means of combatting the unjust methods hitherto used against us. And now, when her statesmen see fully what a valuable instrument we have obtained, her cry is that we are a faithless nation.

Discriminating Duties in the Indirect Trade

Let us first have a plain understanding as to the difference between what is termed direct trade and indirect trade. If, for example, a vessel flying our flag carries a cargo from a port in the United States to a port of Brazil, that, so far as we are concerned, is direct trade. If the same vessel then loads at the Brazilian port and carries a cargo thence to Liverpool, that, so far as we are concerned, is indirect trade. If the same vessel then brings a cargo from Liverpool to any port of the United States, it is again direct trade. A vessel which carries between a port of her own country and a port of any foreign country is engaged in direct trade. A vessel which carries from a port in one foreign country to another port in the same or another foreign country is engaged in indirect trade. Now, fair trade between two nations presupposes that the direct trade between them shall be carried partly in the vessels of each. When such trade is carried, not in the vessels of either nation, but in the vessels of a third country, foreign to both of them, an injury has been done to the commerce of both nations whose trade has been thus interfered with.

Our direct commerce with South America, such as between the eastern ports of the United States and Santos, Rio, Montevideo and Buenos Aires, is almost all carried by the ships of Great Britain-indirect trade to her. This is trade that should be ours, and could readily be reclaimed if a discriminating tariff duty were levied against vessels carrying indirectly. If all the tariff duties levied upon the products of these South American countries were lessened by 5 per cent ad valorem when brought to us in vessels of the United States, these products would soon all be carried in our vessels. Upon such products as now come in free a tariff of 5 per cent might be levied if brought in the vessels of any third country. This would soon restrict such commerce to vessels of the United States and vessels of the nation with which we are trading. A discriminating tariff of 5 per cent seems small, but let us compute what it would be on a cargo of 1,000 tons of coffee. A ton of coffee is valued at about \$300. One thousand tons would be worth about \$300,000. A 5 per cent duty would amount to \$15,000. If it cost the consignee \$15,000 less when carried in a vessel of the United States, he would promptly arrange to have it carried in a vessel flying our flag. A discriminating duty levied on the indirect consignee \$15,000 less when carried in a vessel of the United States, vessels and those of the nations with which we are directly trading.

The advantage of a duty against the indirect trade is that it will be subject to no harmful reprisals. If we levy such duties and Great Britain and Germany make reprisals in kind, we shall be utterly indifferent. Such duties can not harm us, because our vessels are carrying no indirect trade. All we hope for in the present and for years to come is to reclaim our own share of our direct trade.

Another advantage is that discriminating duties in the indirect trade will not so vitally affect our treaties. Some provisions will have to be changed, but our commercial relations will not be so much disturbed as if we levied discriminating duties on the direct trade

Inasmuch as nearly all our foreign commerce, except with Great Britain, Germany, France and Japan, is now carried by vessels engaged in indirect trade, such a provision would in a brief time restore to our vessels the direct trade with all the remainder of the commercial



world. Our shipbuilding establishments would be given an enormous addition to their present output. And it is not a strain upon credulity to believe that with this added demand for vessels and the consequent opportunity to specialize in types of deep-sea-going craft, they might be able to soon construct ships at approximately the same prices charged by foreign builders. When that time comes discriminating duties will have served their purpose and may thereafter be abolished.

A Commerce Commission to Govern the Sea

In a room of the Produce Exchange Building in New York City meets, on Monday of each week, representatives of the steamship lines which carry all our products to Brazilian ports. There they fix the rates that American freight to our sister republic shall pay. They fix also the price that American citizens shall pay for traveling to Brazil. If they can not agree, they cable to the owners of these lines in England, for they are all British or German lines, and the final decision is made in London.

All the steamship lines that carry freight to and from the Argentine are governed by a like conference which meets once a week in New York City. If the representatives can not agree, they cable to the owners in Great Britain, for these lines also are all British and German, and the final word is said in London. The owner of one of these lines is Mr. Houston, who is a member of Parliament. No rate can be agreed upon until he is satisfied. In other words, we are in such a pass that a member of the British Parliament practically dictates the price it shall cost us to ship American manufactures to our customers in foreign lands.

Last summer some merchants of New Orleans tried to establish an American line to run from their city to Brazilian ports. They sent down three ships loaded with American machinery, one after another, but they could not get a ton of freight on the return voyages. So the venture didn't pay and they gave it up. The reason they could not get any return freight was because these British lines running from Brazil to the United States had established a system of deferred rebates with all the merchants in the Brazilian ports. They have a monopoly and they had made contracts with these merchants by which, if the merchants used these British lines only, after each six months they get a rebate of 10 per cent on all the freights they have paid. If during this time a merchant has once shipped freight by any other line, he loses his rebate for the whole six months. It might well be, also, that if a merchant shipped just once by an independent boat, the conference lines would not take his freight at all for awhile. They might not have room for his freight. At least, that is what these merchants think.

Is not such a situation intolerable? And when you think that all our trade with all parts of the earth—to Great Britain, and to France, and to Germany, and to South Africa, and to Australia—all our goods carried by steamship lines owned and operated by foreigners, all in combines and mostly giving rebates—when you think of these things does it not, in all candor, seem that we Americans have neglected our ocean commerce just about long enough?

It is not because Congress has not power to regulate commerce, but because our people have been so busy filling up the free spaces in our continent with towns and factories and railroads that they have not cared much what happened on the sea. Congress has plenty of power, granted by the Constitution. In times past Congress has prohibited the shipping of any products at all. At one time no British vessels were allowed to clear at any of our ports. There is no question as to the power of Congress to es-

tablish the conditions upon which foreign vessels may enter and clear at our ports.

What must be done is to establish a tribunal like our Interstate Commerce Commission, which shall have power to fix the rates of freight and passenger service on the ocean. Then Congress can enact a law making combines of ocean lines illegal, making rebating illegal, and refusing permission to any steamship line to do business in our ports if it be guilty of these practices. That would stop it, and it would make ocean freights uniform and reasonable and give American lines a chance to do business if the extra cost of running ships under our flag is equalized by the use of the Panama Canal and discriminating duties on our indirect trade.

It would also be in the province of this marine commerce commission to fix the rates that shall be charged for freight and passengers. And also to fix the frequency of service and to see that shippers are all put on an equality. Then we could be sure that foreign steamship lines do not discriminate against our products and turn business away from American merchants and factories.

Perhaps it would be better to enlarge our present Interstate Commerce Commission by the addition of two more members, and have the commission in two departments, one to look after railroad rates and the other to supervise ocean rates. This would avoid creating the machinery for a separate establishment and would bring about the desired purpose just as well.

Conclusion

In conclusion, may I express the wish that some of the patriotic members of the incoming Sixty-third Congress, soon to be called in special session, will introduce bills to accomplish the purpose indicated; and also that the Democratic majority in both Houses see to it that these measures be enacted into law?

Aside from an adjustment of the tariff and the enactment of a satisfactory currency law no subject is of greater importance to the future commercial well-being of our nation than the upbuilding of our merchant marine. We have become a world power, we have outgrown the limits of our wonderful and productive mainland. It is the hope of every patriotic American that we now take our proper place upon the sea, so that the Stars and Stripes may proudly float from our vessels in every quarter of the globe.

New Steamers for N. Y. K.

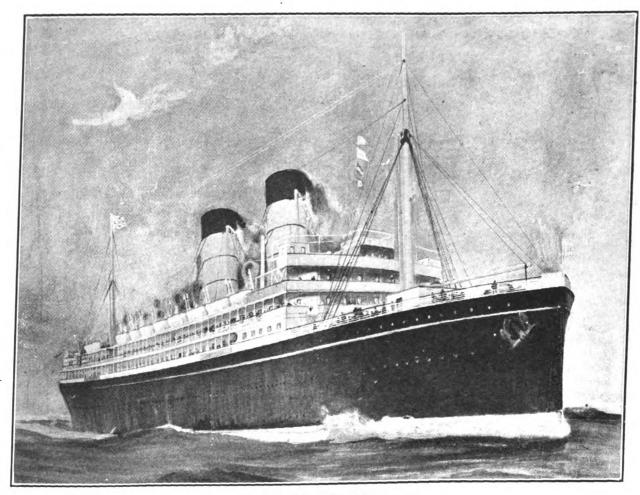
The Nippon Yusen Kaisha is having two new steamers constructed for its European service, a description of which we have received from the chief of the fleet division of the N. Y. K. at Tokyo, Japan:

- S. S. "Kashima Maru," gross tonnage, 10,500; dimensions, 490'-0"x61'-0"x36'-6"; cabins, 1st 46, 2nd 16, Inter. 2; passengers, 1st 113, 2nd 58, Inter. 12, 3rd 170; engines, twin, 27"x45'4"x76"-54"; boilers, 7 singles, 14'-6"D.x11'-9L; steam pressure, 200 lbs.; sea going speed, 15 knots; built in Kobe; to be completed December, 1913; D. W. capacity, 11,000; measurement capacity, 12,000; service assigned to European line.
- S. S. "Kaori Maru," gross tonnage, 10,500; dimensions, 490'-0"x61'-0"x36'-6"; cabins, 1st 46, 2nd 16, Inter. 2; passengers, 1st 113, 2nd 58, Inter. 12, 3rd 170; engines, twin 27"x42"x66"-48" and L. P. turbine; boilers, 6 singles 15'-6" D.x11'-6"L.; steam pressure, 200 lbs.; sea going speed, 15 knots; built in Nagasaki; complete, October, 1913; D. W. capacity, 10,900; measurement capacity, 12,000; service assigned to European line.

Besides the above, three larger steamers for the same service, each 12,000 tons gross, have been ordered recently.





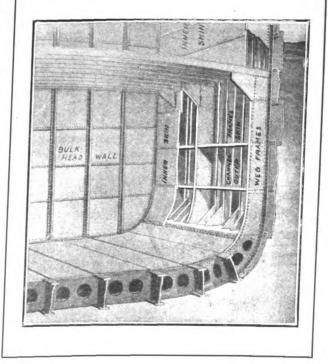


S. S. "NIAGARA" Now Mearing Completion for the Canadian Australian Mail Line's Vancouver-Australian Service

THE UNDERWATER PROTECTION OF THE S. S. "OLYMPIC"

The White Star Line is to be congratulated upon the promptness with which it has recognized the lesson of the loss of the S. S. "Titanic" and the thorough steps taken to insure the higher safety of her sister ship, the S. S. "Olympic," against any such disaster.

The widely accepted conclusion that although the construction of this class of vessels is of the highest character relative to material and workmanship, the underwater protection as in the "Titanic" case proved deficient. It is well known that the "Mauretania" type of the Cunard S. S. Company whose vessels are all classed under British Lloyds highest class are provided with an inner skin in shape of longitudinal watertight bulkheads which form the inner walls of coal bunkers and extend throughout the boiler spaces. In the reconstruction of the S. S. "Olympic" an inner skin has been adopted in the form of plating on the inside of the main frames of the vessel, carrying the plating of the double bottom up the side of the ship as far as deck F. Below the lower deck, the inner skin is then riveted upon the frames, and will be about 2 feet 6 inches distant from the outer skin of the ship. Between the lower deck and deck F the skin is practically three feet inboard. The accompanying sketch shows the condiditions in the ship as originally built and as they will be when the inner plating has been completed. Additional watertight bulkheads have been constructed fore and aft



Google-digitized Generated on 2024-07-25 15:02 Public Domain, of the boiler spaces, some of which are carried up to "B" deck 40 feet above the waterline. To advantageously utilize the space of which the lower holds are deprived by the placing of the inner skin, it has been decided to use the space in the forward and after bunkers for the carriage of oil fuel, which in time will be used in one or more boilers as fuel by way of experiments. The White Star Line is hopeful that the trials, which will begin immediately after the "Olympic" resumes her sailings on April 5th, this year, will be entirely successful, and in that event, provision will be made on their new liner "Brittanic," now in course

of construction at Belfast, for the space between the inner and outer skin to be used for the storage of oil fuel. (An excellent preventative against corrosion in these spaces, including various other advantages so well known to the naval architect.)

As it is probable that a double shell system will in the future become the rule rather than the exception on passenger steamers, the decision of the White Star Line makes an important step in the history of fuel oil on huge transoceanic liners and the experiment will be watched with keen interest by the shipping world.

GERMAN NAVAL ARCHITECTS HOLD INTERESTING MEETING

BY JOS. B. OLDHAM, N. A. M. E.

MOST interesting meeting of the German Naval Architects was held at Charlottenburg, reports of which came to hand last month. To summarize these reports:

Prof. O. Flamm of the technical college of Charlottenburg read a paper on "The Unsinkability of Modern Steamships," in which he investigated the statical stability of the "Titanic" and the "Mauretania," but unfortunately his diagrams are not reproduced. However, he states that the "Titanic" showed the peculiarities already known, viz., negative stability at the small angles and considerable positive stability at larger angles, while the "Mauretania," on the assumption that her wing compartments remained intact, proved exceedingly safe against capsizing in a damaged condition.

I may here remark that the negative metacentric height of such steamers as the S. S. "Canopus," which could not remain upright without ballast, was due to large displacement in proportion to the moment of inertia. Or initial in-

TRANSVERSE SECTION OF GRAIN LADEN STEAMER WITH

CARGO SHIFTED. Feet CURVE OF STABILITY. with Centre of Gravity 1.3 feet alove the Metacentre

20 80 40 50 60

stability may be due to a high center of gravity through changes in the disposition of weights, or by the shifting of cargo. The late William John investigated a most inter-

esting case of this kind which I may illustrate by the transverse section and curve of stability shown herewith.

This vessel took a great list to port and was abandoned by her crew as they feared she would capsize. The list was due mainly to the shifting of her grain cargo in the lower hold, and through a large quantity of water getting into the hold and wetting the grain. This gave her a list of about seventeen degrees, but she could not capsize and was subsequently brought into Corunna. The cargo was then taken out of the 'tween decks, the hold trimmed and filled up. The water had been pumped out of the holds, but still the vessel had a list to port. This was, of course, due to the large quantity of water soaked up in the grain, on the port side. The captain had secured more dry grain to put on board, and he endeavored to correct the list. He, therefore, stowed it in bags on the starboard side in the 'tween decks, but the more he stowed, though on the starboard side, the more the vessel heeled to port; and the water ballast tanks had to eventually be filled to correct the list. This may appear paradoxical, but a moment's consideration will show that such a result is quite possible. The center of gravity was, of course, moved to the starboard side as expected, by putting in the new grain, but that center was also lifted up, and the effect of this rise more than counterbalanced the favorable distribution of the grain on the vessel's stability. At a different angle of heel, the effect of putting in the same weights in the same position would have been quite different, and the question of finding the effect of placing weights in a vessel, already at an angle of inclination will, I think, be found a more interesting one than would be at first supposed. I may also point out that though a vessel may have a list of as much, say, as fifteen degrees, that in itself should not cause abandonment. In the illustrations I have drawn it may be seen that, though that vessel could not remain in the upright position as she then had a large negative metacentric height, there was absolutely no danger of her capsizing, as the curve of stability clearly indicates that she had a considerable righting lever, and a righting moment of several thousand tons, even at 70 degrees of inclination.

Prof. Biles, in his excellent new work, gives an illustration of a vessel in which the G. M. is negative as much as 1.77 feet, but which is corrected by adding 850 tons of water ballast to a positive G. M. of .12 feet.

Sir William White also supplies an illustration in which a vessel, with no water in her ballast tanks, has the common center of gravity 1.25 feet above the metacenter. To this I may add that the height of the metacenter above the center of bouyancy for a fixed draught and displacement is dependent wholly on the mean breadth of the water plane.

Structural Strength

Otto Lieneau, of Dantzic, treated of "Stresses on the Longitudinal Structure of Steel Vessels," regarding the



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longitudinal frame construction, he said that the pressure exercised by weight of cargo and by water pressure respectively must not be disregarded. Longitudinal frames at the side and in the 'tween decks showed to less advantage, and the combination system (this, we presume, means that the sides are supported by transverse frames) was therefore considered to have the same strength as the Isherwood one. Although the side stringers were not to be looked upon as longitudinal structural parts, he would on grounds of local strength, not like to give them up. Local strength had always been neglected in favor of longitudinal strength."

I may here add that the Isherwood system continues in favor. The number of vessels now completed in Great Britain being 145 of 710,671 tons, while the vessels built by, or ordered from foreign shipbuilders, makes the aggregate 240 vessels of 1,078,151 tons.

This represents about one-half of the tonnage built in the United Kingdom last year, which aggregates 2,054,000 tons, exclusive of the government dock yard tonnage. Regarding the above amount of tonnage the "Engineering" of London says: "There is again some confusion of opinion as to the standard by which tonnage is reckoned." This, has already been pointed out in the Pacific Marine Review.

Registered Tonnage

Herr Kerner, of Kiel, contributed a paper on "The Reorganization of Harbor Dues and Measurement of Tonnage." He said that port dues, as matter of principle, were considered to be an equivalent for services rendered, and profit was not looked for. Cargo capacity, therefore, was considered to be the only just basis of dues.

Herr Schunke, of the Tonnage Office, Berlin, said he could not defend the British system. It did not give an ideal measurement. But he thought it would be impossible to get it altered.

Herr Isaakson, of Stockholm, said if he had to choose between the British system and that proposed by Herr Kerner, he would without hesitation take the latter, for any other system would be better than the British one. If only other countries would agree on a new system, Great Britain would be obliged to adopt it.

The writer having proposed a new system of register tonnage measurement on several occasions during the last ten years, it may be permissible for him to say that no country has greater reason for being dissatisfied with the most inequitable "international" tonnage laws than the United States. In proof of which I herewith annex a table illustrating the arbitrary manner of application of the reduction clauses of the tonnage act, by foreign nations, and its baneful effect upon our foreign going vessels. By this you may see that of nine very similar vessels, the foreigners' deduction is twenty-eight per cent in excess of the American. The former amounting to 62 per cent, and the latter, American, amounting to only thirty-four (34%) per cent.

The writer's efforts to inaugurate a new fiscal tonnage law, based on the actual cargo capacity and dead-weight ability, were practically abandoned a decade since, through lack of support in his efforts to disturb the gigantic inertia of the powerful supporters of the present international register tonnage act. But, if I interpret the spirit of the German naval architects aright, it would seem as

Hough's System of Ship Construction

For the Economical Handling of Lumber, Steel Material and Other Like Cargo

Por Particulars Write

EDWARD S. HOUGH, Consulting Engineer
16 California Street San Francisco, Calif.

if the subject might again be agitated, and that with hopes of ultimate success.

Comparison of extreme abritrary deductions from the gross tonnage in computing the net register of foreign steamsnips:

Comparison of Extreme Arbitrary Deductions From the Gross Tonnage in Computing the Net Register of Foreign Steamships British

5. (1,0)		
	Length,	Deductions,
British—	Feet	Per cent
"City of Berlin"	488	46
"City of Manchester"	374	34
"City of Rome"	560	57
"Oceanic"		60
"Shamrock"		66
"Mona's Isle"	331	67
"Volscian"		70
"Lusitania"		71
"Dauntless"		89
British mean deduction, 62 per cent		
American—	•	
"Indiana"	343	23
"Pennsylvania"		23
"Kroonland"		37
"Manchuria"		36
"City of Cleveland"		47
"Puritan"		33
"Visitor"		27
"Minnesota"		35
"Islander"		48
101011401		40

American mean deduction, 34 per cent.

The extra expense incurred by this excess of official tonnage represents a loss in the American foreign trade of

of five million (\$5,000,000) dollars per annum.

THE TORPEDO BOAT DESTROYERS

The tendency in torpedo boat destroyers is in the direction of higher speeds and larger displacements, possessed of seagoing qualities, being built as solidly as steel can go together, and by virtue of its speed has both defensive and offensive powers.

The whole wide ocean is theirs, for they have proven their seaworthiness on voyages as far as the Philippines.

To achieve the remarkable speed of 30 to 33 knots per hour with a vessel as far removed from the racing motor boat as it is from the battleship, is wonderful. We find that the present day destroyers are fitted with two, three and four screws on as many shafts, driven by steam turbines, with water-tube boilers using oil fuel instead of coal.

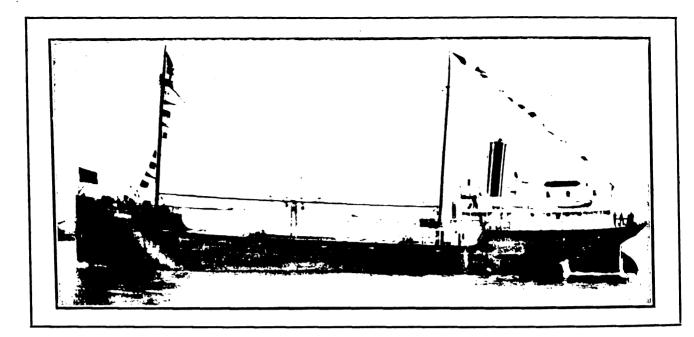
We have only begun to create our destroyer navy of the modern type, although more than a dozen years have elapsed since Theodore Roosevelt, as assistant secretary of the navy, made his urgent appeal for a hundred of them. He insisted that they were indispensible, and that knowledge of their best uses would come to us with the handling of them.

And so it has. From being pretty fair imitations of modest private yachts, the destroyers have grown to the dimensions that are accorded them today, 300 feet over all, 1,010 tons displacement, and a beam of 30 feet 6 inches.

These measurements mean that the destroyers can approach a warship head on and offer only a little over 30 feet 6 inches of target surface; and can do it at night, which is her time for firing. The searchlights have a range of about 4,000 yards, and the torpedo can be made effective now at 5,000 yards; so that the destroyer of the present type can lie wholly beyond the perceptive power of any enemy and launch her 250 pounds of gun cotton, which fills the war head of the torpedo, in complete immunity from reprisal.

The Safety Car Heating and Lighting Company has received an order from the United States Lighthouse Department for seven type "C" Pintsch gas buoys, complete, with mantle lanterns. These buoys are to be placed in the Elizabeth river, Norfolk, Va., and will mark the channel to the Portsmouth navy yard.





S. S. "PARAISO" DELIVERED TO OWNERS

The steamer "Paraiso" has just been completed at the yards of the Craig Shipbuilding Company, Long Beach, California. The vessel is 230 feet in length overall, 40 feet beam and has a moulded depth of 16 feet.

The boilers are two in number of the Scotch Marine type. and were constructed by the Manitowoc Boiler Works Company, of Manitowoc, Wisconsin. They measure 10 feet 10 inches outside diameter by 11 feet long over heads and are designed for a working pressure of 160 pounds. One donkey boiler constructed for 120 pounds pressure was also supplied by the Manitowoc company.

The "Paraiso" is fitted with two surface condensing compound engines, operating twin screws of about 500 horsepower each. The boat is designed as a lumber carrier and has passenger accommodations for fifty. She is owned by the Long Beach Steamship Company of Long Beach, California, and will ply between California points and northern ports.

The vessel and her entire equipment represent high efficiency. She is designed and built along artistic and oractical lines and is modern throughout.

STEEL CONSTRUCTION DURING THE YEAR 1912 AS REPORTED BY THE PRINCIPAL SHIPBUILDING YARDS OF THE UNITED STATES

The following reports from the principal shipbuilding yards in the United States show on the whole an improvement over those received last year, and all feel that the year 1913 promises to eclipse any since 1904. Among the answers received to the questions we sent:

- A. Do you consider the prospect encouraging for the vear 1913?
- B. Have labor difficulties embarrassed you particularly during the past year?
- C. Have you experienced special difficulties in securing materials?
- D. Does the year closed, in your judgment, mark any special line of progress and improvement in steel, shipbuilding, either in designing and class of vessels, in material or in shipbuilding tools?
- E. What average number of men have you employed during the year and what is your average weekly or monthly wage expenditure?

The majority agree that the most marked progress and improvement was the substitution of oil for coal fuel, while W. A. Fletcher & Co., who have engined a large number of vessels during the past year, report the installation of geared steam turbines for freight and passenger as well as government destroyers, also the installation of and improvements in internal combustion engines. Several complain of having experienced delay in securing steel ship-

The number of vessels built on the Atlantic Coast for Pacific Coast owners is noticeable, and among these we cite the following: "Alameda," ferryboat, shipped to the Pacific Coast by the New York S. B. Co.; the steamers "Manoa" and "Matsonia," built by the Newport News Shipbuilding and Drydock Company for the Matson Navigation Company; "Adeline Smith," lumber vessel, built for the C. A. Smith Lumber Company by the Newport News Shipbuilding and Drydock Company; "Cordova," built for the Alaska Steamship Company by the Harlan & Hollingsworth Corporation; "Columbia," built by this same company for Wilson Bros. & Company, lumber manufacturers of San Francisco; "John A. Hooper," built for Messrs. Sudden & Christianson of San Francisco by the same builders; "Oliver J. Olson," built by Harlan & Hollingsworth for the lumber carrying trade of Messrs. Olson & Mahoney, also of San Francisco. The New York Shipbuilding Company, who only reported the ships actually launched during the past year, are building two steamers for the coastwise service of the Pacific Coast Steamship Company. Will the Panama Canal assist in any way Pacific Coast shipbuilders in competing with those on the Atlantic? We are of the opinion that it should and will. The reports above referred to follow.-Ed. Note.



Seattle Construction and Drydock Company, Seattle Wash,

"Star I," 196 gross tons; speed, 12 knots; engines, 3 cyl. triple expansion; I. H. P., 600; type and class of vessel, whaling steamer; owners, U. S. Whaling Company.

"Star II," 143 gross tons; speed, 12 knots; I. H. P., 440; engines, etc., same as above.

"Star III," same as above.

"Aberdeen," 116 gross tons; speed, 12 knots; engines, 3 cyl. triple expansion; I. H. P., 350; owners, Canadian North Pacific Fisheries Company; trade, whaling.

"Westport," same as above.

"Sol Duc," 1,085 gross tons; speed 16 knots; engines, 3 cyl. triple expansion; I. H. P., 500; type of vessel, passenger; owners, Inland Navigation Company.

"Potlatch," gross tonnage, 575; speed, 14 knots; engines, etc., same as above.

The Seattle Construction and Drydock Company also completed a 12,000-ton floating drydock for their own use and two submarines for the U. S. Government. A large caisson for the U. S. Government Graving Dock was also completed and delivered to the Navy Yard at Bremerton.

This company's answers to our questions are as follows: A. "Yes"; B. "No"; C, "Yes, steel material on account of rush of business at the mills—deliveries were not prompt"; E. "Average about 1,100 men."

Union Iron Works, San Francisco, Cal.

The Union Iron Works Company send us the following report of their progress for 1912, in addition to which they now have three steel lumber carriers under construction of the following dimensions:

Length	235′
Breadth moulded	42′ 6″
Depth moulded	18′ 8″
Cargo capacity, feet of lumber	1,500,000
I. H. P	1,250
Speed loaded	10½ knots

These boats have a continuous double bottom for full length of vessel, and will carry approximately 500 tons of fuel oil; they are fitted with the U. I. W. oil-burning system, mechanical atomization. One of these boats is for the Loop Lumber Company, one for the Eschen & Minor Company and one for the Hill-Jerome Company.

They also have under construction one stern wheel steel boat for the Standard Oil Company, to be used as bay and river steamer for delivery of fuel oil to vessels. This vessel is equipped with the Union Iron Works oil-burning system, mechanical atomization.

The Union Iron Works Company also has under construction five submarines of the Electric Boat Company's design, which are from 30 to 85 per cent completed.

They report that they have been quite busy with repair work, and, in their opinion, the year 1913 will be a busy one.

Craig Shipbuilding Company, Long Beach, Cal.

This company delivered during 1912 the steamer "Camino," which is 308 ft. long, 44 ft. beam, 13 ft. deep and has a dead weight carrying capacity of 5,000 tons, and accommodations for 90 passengers. She is fitted with triple expansion engines, indicating 2,200 h. p., and three Parker water tube boilers, and has a speed of 12 knots an hour in ballast trim.

The steamer "Paraiso" was also completed. This vessel is 224 ft. long, 40 ft. beam, 16 ft. moulded depth, and has a capacity of 2,000 tons dead weight and accommodations for 50 passengers. She is fitted with twin screws, operated by compound surface condensing engines, indicating 1,100 h. p., and has a speed of 10 knots.

Wm. Cramp & Sons Ship and Engine Building Company, Philadelphia, Pa

The following vessels are now building for the U.S. Navy:

"Thrasher," submarine torpedo boat; engines, Fiat oil engines; I. H. P., 1,000; report of progress, January, 1913, 88.3%.

"Aylwin," torpedo boat destroyer, 1,010 gross tons; speed, 29½ knots; engines, turbines; I. H. P., 16,000; report of progress, 79.3%.

"Parker," "Benham" and "Balch," same as above.

The following vessels are building for the Atlantic and Pacific Steamship Company:

"Santa Clara," "Santa Catalina" and "Santa Cecilia," freight steamers, all of 6,000 gross tons, 12 knots speed, reciprocating engines, 3,000 I. H. P., which were on January, 1913, respectively 25%, 20% and 10% completed.

The "Santa Cruz" is also building for this company and is 4,800 tons; speed, $11\frac{1}{4}$ knots; engines, reciprocating, and on the above date was 95% completed.

"Sacramento," gun boat, 1,425 gross tons; speed, 12 knots; engines, reciprocating; I. H. P., 950; per cent of completion, January, 1913, 2.4; for U. S. Navy.

The "O'Brien," "Nicholson" and "Winslow" are for the U. S. Navy, but construction has not yet commenced on these torpedo boat destroyers; tonnage, 1,050; speed, 29 knots; engines, turbines; I. H. P., 16,000.

Maryland Steel Company, Sparrows Point, Md.

"Orion," naval collier, one deck, tonnage, 10,650; speed, 14 knots; engines, reciprocating; I. H. P., 7,000; owners, U. S. Government; completed and delivered during 1912.

"Jason," same as above; 76% completed, January, 1913.
"Minnesotan," freight ship (three decks), tonnage, 6,600; speed, 11 knots; engines, reciprocating; I. H. P., 4,000; owners, American-Hawaiian Steamship Company, New York; trade, ocean; completed and delivered.

"Dakotan," same as above.

"Dorchester," passenger steamer, one deck, tonnage, 1,090; speed, 16 knots; engines, reciprocating; I. H.P., 1,000; owners, Md., Del. & Va. R. Co., Baltimore, Md.; trade, Chesapeake Bay; completed and delivered.

"Talbot," same as above.

The approximate value of the vessels named so far is estimated at \$3,690,000. The following freight vessels are now under construction for the American-Hawaiian Steamship Company:

"Montanan," "Pennsylvanian," "Panamanian," "Ohioan," "lowan" and "Washingtonian," all of 6,600 gross tons, 11 knots speed, reciprocating engines, 4,000 I. H. P. and respective percentage of completion, January, 1913, 69%, 54%, 34%, 5%, 24% and 1%.

"City of Annapolis" and "City of Richmond" are building for the Chesapeake Steamship Company of Baltimore, Md., and are of 2,000 gross tons, speed 16 knots, engines reciprocating, I. H. P., 2,500; type, passenger steamers; report of progress, January, 1913, 10% and 8% respectively.

The value of the above named steamers is \$4,850,000.

Harlan & Hollingsworth Corporation, Wilmington, Del.

"Cordova," coastwise lumber steamer of three decks; tonnage, 2,273.50; engines, one triple reciprocating; I. H. P., 1,200; owners, Alaska Steamship Company; trade, lumber; launched Jan. 8, 1912; completed, March 21, 1912.

"Rose Standish," side wheel excursion steamboat, four decks; tonnage, 900; engined by W. A. Fletcher & Co.; I. H. P., 1,400; owners, Nantasket Beach Steamboat Company; completed Feb. 15, 1912.

"Henry Williams," coastwise freight steamer, three decks; 1,861 gross tons; engines, one triple reciprocating;



I. H. P., 850; owners, Baltimore and Carolina Steamboat Company; trade, freight; completed June 3, 1912.

"Columbia," coastwise lumber and passenger steamer, two decks; gross tonnage, 1,923; engines, one triple reciprocating; I. H. P., 1,200; owners, Wilson Bros.; trade, lumber and passenger; completed Aug. 7, 1912.

"John A. Hooper," coastwise lumber steamer, two decks; gross tonnage, 2,244.63; engines, same as above; I. H. P., 1,700; owners, Sudden & Christianson; trade, lumber; completed Nov. 30, 1912.

"Mauch Chunk," harbor lighter, one deck, gross tonnage, 287; engines, one single; I. H. P., 450; owners, Central Railroad Company of New Jersey; trade, harbor lighter; completed Sept. 28, 1912.

"Germantown," ocean tug, one deck, 619.28 gross tons; engines, one triple reciprocating; I. H. P., 1,050; owners, the Reading Company; trade, ocean towing; completed Dec. 19, 1912.

"Oliver J. Olson," coastwise lumber and passenger steamer, three decks, gross tonnage, 1,881; engines, one triple reciprocating; I. H. P., 1,200; owners, Olson & Mahoney; trade, lumber and passenger; completed Dec. 31, 1912.

Engines were completed during 1912 for hulls not built by Messrs. Harlan & Hollingsworth as follows:

Two triple reciprocating, 1,200 I. H. P.; nine compound reciprocating, 4,320 I. H. P.; boilers, 36 cylindrical return tube, I. H. P., 10,975, and two straight through, I. H. P., 990.

Vessels in hand, January, 1913, to be completed during this year:

"Narragansett," 4,000 tons; engines, two triple, 4 cyl. reciprocating; I. H. P., 4,800; type, twin screw freight and passenger steamboat; owners, Central Vermont Trans. Co. "Manhattan," 4,000 tons; engines, etc., same as above.

Central Railroad Ferry No. 10, 1,565 tons; engines, 1 triple, 4 cyl.; I. H. P., 1,500; type, double end screw ferry boat; owners, Central Railroad Company of New Jersey; trade, New York Harbor.

Central Railroad Car Float No. 11, tonnage, 852, to be towed.

Central Railroad Car Float No. 12, same as above.

Engines in hand for hulls not built by this firm: Two triple, reciprocating, I. H. P., 1,200; three compound, reciprocating, I. H. P., 1,360. Boilers, 11 cylindrical return tube, I. H. P., 4,092, and 1 locomotive type, I. H. P., 700.

The two questions answered are: $^{\circ}$ C. "Great," and D. "No."

W. A. Fletcher & Co., Hoboken, N. J.

Engined "Rose Standish," speed, 14 knots; engines, compound inclined; I. H. P., 1,600; type, paddle excursion; owners, Nantasket Beach St. B. Co.; completed.

Engined "Niagara," speed 14 knots; engines, double compound screw each end; I. H. P., 1,600; type, double deck ferryboat; owners, New York Central R. R. Company; trade, ferry.

Engined "Aquehonga," speed 10 knots; engines, beam engine; I. H. P., 300; type, single deck ferryboat; owners, New Jersey and Staten Island Ferry Company; trade, ferry; completed.

Engined "Washington Irving," speed 22 knots; engines, 3 cyl. included engine; I. H. P., 7,000; type, paddle excursion; owners, Hudson River Day Line; trade, Hudson River; to be completed April, 1913.

Engined "Primeird," speed 10 knots; engines, beam engines; I. H. P., 400; type, double deck ferry; owners, Rio Janiero Ferry Company, Brazil, S. A.; trade, Rio Janiero Harbor; completed.

Rebuilt "Holland,' speed 15 knots; engines, beam engine; I. H. P., 1,750; type, paddle freight and passenger; owners,

Graham & Morton Trans. Co., Chicago, Ill.; trade, lake passenger and freight; completed.

Rebuilt "M. Martin," speed 14 knots; engines, beam; I. H. P., 900; type, paddle freight and passenger; owners, Central Hudson Steamboat Company; trade, Hudson River; completed.

W. A. Fletcher & Co. have answered our questions as follows: A. 'No"; B. "No"; C. "Some on steel"; D. "Changes mostly in motive power. Geared steam turbines for freight and passenger and government destroyers. Installation and improvements on internal combustion engines. More general adoption of oil fuel"; E. "\$470 a week at Hoboken plant."

Bath Iron Works, Bath, Me.

"Jouett," 720 displ.; speed, 33 knots; engines, 3 screw Parson's turbines; I. H. P., 12,000; type, torpedo boat destroyer; owners, U. S. Government; completed; cost, \$654.500.

"Jenkins," same as above with the exception of the speed, which is 33.02 knots.

"Cassin," displ. 1,020; contract speed, 29¼ knots; engines, two screw Parson's turbines; I. H. P., 16,000; type, torpedo boat destroyer; owners, U. S. Government; report of progress, January, 1913, 68.8%; cost, \$761,500.

"Cummings," same as above; report of progress, January, 1913. 60.9%.

"Rangeley," gross tonnage 600; sped, 17 knots; engines, single screw reciprocating; I. H. P., 1,200; type, high speed passenger and baggage steamer for bay service; owners, Maine Central Railroad; trade, Mt. Desert ferry to Bar Harbor, Me.; report of progress, January, 1913, 35%; cost, \$200,000.

The questions have all been answered: A. "Yes", B. "No"; C. "No. Are having trouble in securing early deliveries for 1913"; D. "No"; E. "900 men, \$10,000 weekly."

Detroit Shipbuilding Company, Detroit, Mich.

"Calcite," gross tonnage 3,996; engines, reciprocating; I. H. P., 1,700; type, self-unloading bulk freight screw wheel steamer; owners, Calcite Transportation Company; trade, lime rock and coal; completed.

"Lucius W. Robinson," 1,655 gross tons; reciprocating engines; I. H. P., 1,000; type, bulk freight screw wheel steamer; owners, Geo. Hall Coal Company; trade, coal; completed.

"Sceandbee," gross tons 7,000; engines, 3 cyl., compound inclined; I. H. P., 10,000; type, side-wheel passenger steamer; owners, Cleveland & Buffalo Transit Company; trade, passenger and package; launched Nov. 9, 1912.

"Not named," tonnage 1,650; engines, reciprocating; I. H. P., 1,000; type, bulk freight; owners, Geo. Hall Coal Company; coal trade; on ways, January, 1913.

Another freighter, the same as above, is also on the ways.

New York Shipbuilding Company, Camden, N. J.

"Jarvis," torpedo boat destroyer; displ., 742; speed, 29¼ knots; engines, Parson's turbines; I. H. P., 12,000; owners, U. S. Government; launched April 3, 1912; delivered.

"Alameda," ferryboat, knocked down and shipped to Pacific Coast May 10, 1912.

"Sonoma" and "Ontaria," sea tugs, 1,120 tons; speed, 14 knots; engines, reciprocating; I. H. P., 1,800; owners, U. S. Government; delivered.

Two Car Floats, 100 gross tons; owners, New York Central Railroad Company; delivered.

"Rayo" and "Eldegunda," 3,663 gross tons; speed, 12 knots; engines, reciprocating; I. H. P., 1,800; type, bulk oil; owners, Standard Oil Company; trade, coast; delivered.

"Gulfoil," 5,188 gross tons; speed, 13 knots; engines, reciprocating; I. H. P., 2,500; type, bulk oil; owners, Gulf Refining Company; delivered

"Washington Irving," gross tonnage 3,800; speed, 18



knots; engines, vertical side wheel; I. H. P., 6,000; type, side wheel passenger steamer; owners, Hudson River Day Line.

"Poontoon," 800 tons, for U. S. Government.

Car Float, 1,000 gross tons; delivered.

"Middlereh," gross tonnage 4,727; speed, 12 knots; engines, reciprocating; I. H. P., 2,100; type, collier; owners, Boston Coastwise Steamship Company; delivered.

"Norfolk," gross tonnage 3,700; speed, 11 knots; engines, 3 cyl. triple; I. H. P., 1,750; type, collier; owners, Boston Coastwise Steamship Company; delivered.

Seven vessels in addition to the above are still on the stocks to be launched during the next three or four months.

The Argentine battleship and a Chinese cruiser are now in the water fitting out.

The New York Shipbuilding Company have-sent the following answers to the questions asked: A. "Yes"; B. "Not at all"; C. "No"; D. "A marked progress in the use of oil instead of coal as fuel"; E. 'Four thousand."

Manitowoc Shipbuilding and Drydock Company, Manitowoc, Wis.

During the year 1912 this company completed a 2,100 floating drydock for themselves at a cost of \$125,000.

Two dump scows were also completed for the Great Lakes Dredger and Dock Company at a cost of \$23,000 each. "E. Gunnell," of 688 tons; speed, 11 knots; type, sand sucker, one deck; engines, reciprocating; I. H. P., 500; was

completed at a cost of \$8,000 for the Lake Sand Company. "Richard Fitzgerald," of 167 gross tons; speed, 12 knots; engines, reciprocating; I. H. P., 600; type, harbor tug; owners, Chicago Lighterage Company; trade, harbor towing; was delivered at a cost of \$40,000.

A dump scow was delivered to the Fitzsimmons-Connell Company, Chicago, at a cost of \$1,800.

"Conrad Storke," of 151 gross tons; speed, 12 knots; engines, reciprocating; I. H. P., 600; type, harbor tug; owners, Milwaukee Tug Boat Line; trade, harbor towing; cost \$35,000; was also completed.

A bridge pontoon was delivered to the City of Chicago; contract price, \$3,700.

The Manitowoc Shipbuilding and Drydock Company answers our questions as follows: A. "Very much so"; B. "No"; C. "Yes, steel delivery poor"; D. "No"; E. "400—\$30,000 per month."

Fore River Shipbuilding Company, Quincy, Mass. Work completed in 1912:

"New Orleans," 6,500 disp.; speed, 9 knots; engines, 12-19-32x24; I. H. P., 2,500; type of vessel, suction dredge; owners, U. S. Engineers.

"Swell," 250 gross tons; speed, 10 knots; engines, 12%-22-36x24; I. H. P., 450; type and class of vessel, traveler; owners, Bay State Fishing Company; trade, fish.

"Surf," 250 gross tons; sped, 10 knots; engines, etc., same as above.

"Nelson," 4,747 gross tons; speed, 10 knots; engines, 25-41-68x48; I. H. P., 2,100; type of vessel, single deck freight steamer; owners, Cuba Distilling Company; trade, coastwise.

Work on hand, January 1st, 1913:

"Rivadavia," engines, turbines; type of vessel, battle-ship; owners, Argentine Navy.

The following vessels are building for the U. S. Navy: Four submarines and the "Duncan," of 1,010 disp., speed 29 knots, engines turbines, type T. B. destroyer; the "Nevada," 27,500 disp., speed 20.5 knots, engines turbines, type battleship; the "Niagara," submarine tender, and also the "Cushing," T. B. destroyer.

"Frieda," 2994 gross tons; speed, 11 knots; engines, 11 22½-39-63x48; I. H. P. 1800 type; single deck freight steamer. Owners, Union Sulphur Company; trade, coastwise.

"Richmond," engines, 23-32 ¾-49-71½x51; 3000, oil tanker. Owners, Standard Oil Company; trade, coastwise.

Four Car Floats for the N. Y. N. H. & H. Railroad Co.

"Wave," engines, 12 %-22-36x24; I. H. P. 450; type of vessel, trawler. Owners, Bay State Fish Company; trade, coastwise.

"Billow" and "Breaker," seame as above.

The Fore River Shipbuilding Company, over the signature of its president, Francis T. Bowles, appends the following answers to our questions: A. "Yes." B. "No." C. "Not much, but deliveries for 1913 are very poor." D. "Development of the crude oil engine for ship propulsion." E. "\$50,000,00 weekly."

Newport News Shipbuilding and Drydock Company Vessels launched during 1912:

"Tuna," submarine; "Fanning," T. B. destroyer; "Texas," battleship; "Miami," revenue cutter; "Unalga," revenue cutter; "Proteus," collier, to the order of the U. S. Navy Department; "Evelyn," tonnage 31,141, I. H. P. 1200; engine, triple; type, freighter. "Lenape," tonnage, 5179, I. H. P. 3500; engines, triple, type freight and passenger.

"Carolyn," tonnage 3,141; I. H. P., 1,200; engine, triple; type, freighter.

"Adeline Smith," tonnage, 2,168; I. H. P., 1,800; engines, triple; type of vessel, lumber.

Car Float of 1,400 tonnage.

"Peter H. Crowell," tonnage, 3,100; engines, triple; I. H. P., 1,200; type of vessel, freighter.

Work on hand, January, 1913:

The following vessels are now nearing completion for the Navy Department: "Proteus," collier; "Nersus," collier, and "Texas," battleship.

The "Peter H. Crowell" and the "Lenape," mentioned above, are also nearing completion.

The following steamers were under construction in January, 1913:

"Illinois," oil steamer of 5,100 gross tons; port of registry, New York; I. H. P., 2,800; engines, triple expansion.

"Lorenzo," freighter of 3,060 tonnage; port of registry, Bath, Me.; I. H. P., 1,500; engines, triple.

U. S. "America Lighter No. 204," for the Navy Department.

"Matsonia," freight and passenger steamer of 9,000 tons; port of registry, San Francisco; I. H. P., 8,500; engines, triple

"Manoa," freight and passenger steamer of 6,900 tonnage; port of registry, San Francisco; I. H. P., 4,000; engines, triple.

Oil steamer of 5,100 tonnage; port of registry, New York; I. H. P., 2,350; engines, triple.

An oil barge is also building for New York owners.

STEEL DELIVERY SLOW

Owing to the shortage of steel, and the difficulty in obtaining supplies of materials, it is probable that the tonnage for the year in Clyde shipbuilding will be considerably lower than the condition of the trade really warrants. The large export trade in steel is restricting British supplies, and in consequence work in the yards is being heavily handicapped. The cost of materials having been increased and delivery having become more uncertain, many builders can not guarantee delivery of new vessels for from eighteen months to two years. Shipbuilders are not, as is contended, making as large profits as is thought among the men and if work were not delayed there would be a large demand for workmen and a rapid increase in the tonnage launched. Greenock and Port Glasgow yards are all extremely busy and have sufficient work on hand for two years, the amount of work booked and under construction being 140,000 tons.



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THE SEAMEN'S BILL

This unnatural and wicked piece of legislation, which in previous articles of the Pacific Marine Review under the title of "Our Merchant Marine and the Seamen's Bill" has been sufficiently discussed as being brought forward by the representatives of the Seamen's Union in the United States with the obvious intention of getting control of the sailors with a view to extorting any demands they might see fit to make, practically inviting mutiny on the high seas, has certainly had its fair hearing before the Senate committee.

The shipowners, managers and superintendents of many good firms including representatives of the different Chambers of Commerce of both coasts and the Great Lakes have given their views on this pernicious matter before the subcommittee, with the result that it may be confidently anticipated that the bill will go over to the next Congress. Much that is impracticable and impossible in this masterpiece of cool confidence will be eliminated by the subcommittee of the Senate in charge and it may further be forestalled that when the bill comes up before the full Senate the sails will be shortened to the main lower topsail, which shortening may necessitate the bill to be sent back to the House and then-Agitator John Havelock Wilson and Company guess again!

CANADIAN SHIPPING LEGISLATION

In the administration of the law pertaining to shipping under the Canadian Government, the Hon. J. D. Hazen, Minister of Marine and Fisheries, has introduced a bill, now pending before the House of Commons, which is of particular interest to the Pacific Marine Review. The bill, "An Act to Amend the Canada Shipping Act," provides first that the Minister of Marine and Fisheries may give directions relative to the registration and names of wrecked ships and second that the inspectors appointed under part VII of the Act, together with such other persons as the minister may appoint, shall form the Board of Steamboat Inspection; the Governor in Council appointing any member of the board as chairman. These measures have been called into existence in the first instance to authorize the department to rename ships without any further legislation in each case and in the latter relative to the Inspection Board, which is in our opinion of particular significance, to add to this board any person who perhaps is not technically qualified as inspector of either hull or boiler but who may possess general fitness to sit on such board and naturally would considerably assist in any decision the board is called upon to render with absolute impartiality to all concerned. We are aware of the difficulties which have recently arisen in the Dominion through inspectors heretofore being alone qualified to compose

this board. With all due respect to the Steamboat Inspection Service of the United States, we feel that if a similar measure would be adopted in this country many of our inspectors as well as those concerned in the marine profession would rejoice in such adoption. However, we have chosen to squabble about all that concerns maritime affairs in our country, prolonging the stagnancy existing in times past to times to come.

TOLLS ON PANAMA CANAL

Great Britain's protest against the decision of Congress to give American vessels in the coastwise trade free passage through the Panama Canal has found strong support in the press of the United States. Many of the great newspapers are urging that the action of Congress be rescinded or that the question be sent to The Hague for arbitration. The reason given is that the word of the United States has been pledged by the Hay-Pauncefote treaty and that if we now do not live up scrupulously to the terms of that treaty we shall stand before the world a faithless nation.

It is easy to sympathize with a sentiment so admirable, because every citizen desires to uphold the honor of his country. But in the present instance this sentiment is beside the mark; it is not properly called forth, since the honor of our government is not involved.

Congress has in its action on this question followed a precedent long ago establisheu, well known to Great Britain, and acquiesced in by her government for 95 years. The protest now lodged is specious and undoubtedly made in the same spirit which has animated Great Britain in all the marine treaties and conventions she has hitherto negotiated with us. And it is to be observed that the grounds upon which this formal protest are made are different from those stated last summer, when the tentative protest was filed. Then it was stated that a repayment by the United States of the tolls charged to American vessels would be violative of the spirit of the treaty. But since then Great Britain has perceived that the temper of the American people is adverse to the repayment of tolls or the payment of any subsidy whatever to our merchant vessels, and that the contention has therefore been abandoned as academic.

Opposes American Merchant Marine

In considering this subject it must be remembered that Great Britain has always been hostile to any effort of ours to establish an American merchant marine and share with her the carrying trade of the world. After the formation of our Constitution the earliest measures adopted at the first session of Congress in 1789 were those granting differentials in duties and tonnage dues to American ships.

These differentials, and the fact that Great Britain was constantly involved in marine warfare with other Europeon nations, so built up our merchant marine that by 1810 our ships not only carried 90 per cent of our own commerce but also a large percentage of the indirect trade of the world. And it was to drive our ships out of this indirect trade, where we were keen competitors, that the war of 1812 was forced upon us. That war was disastrous to us and absolutely successful to her, because it almost entirely destroyed our indirect carrying trade and we were compelled to negotiate and assent to the reciprocity treaty of 1815. This treaty declared, among other matters:

"There shall be between the territories of the United States of America and all the territories of His Britannic Majesty in Europe a reciprocal liberty of commerce. * * *

"No higher or other duties or charges shall be imposed in any of the ports of the United States on British vessels than those payable in the same ports by vessels of the United States nor in the ports of any of His Britannic Majesty's territories in Europe on the vessels of the United



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States than shall be payable in the same ports on British vessels."

Saving Coastwise Trade

Now, this is absolutely the same spirit breathed in the Hay-Pauncefote treaty—equality of tolls and charges, the same to one country as to the other. Yet what followed? Our foreign commerce was prostrated at the termination of the war. Many of the vessels remaining lay rotting at the wharves of Boston and New York and Philadelphia. Therefore, in 1817, Congress enacted a law which absolutely prohibited British vessels from engaging in our coastwise trade—the trade from one American port to another. This law reads:

"No merchandise shall be imported, under penalty of forfeiture thereof, from one port of the United States to another part of the United States in a vessel belonging wholly or in part to a subject of any foreign power."

This law was entirely subsersive of that portion of the treaty of 1815 which stated that "no higher or other duties" shall be charged on British ships than on those of the United States. It established for the first time, and perhaps for all time, our own coastwise trade. Yet the law stood, and it has been acquiesced in by Great Britain since that time.

Congress has now adopted the same policy precisely with regard to the Hay-Pauncefote treaty. As I view the matter, by the paragraph in the Panama Canal act granting free tolls to our coastwise marine Congress abrogated such part of that treaty as conflicted with the Panama Canal act, just as the law of 1817 abrogated that part of the reciprocity treaty of 1815 with which it was in conflict.

Status of a Commercial Treaty

Now, those persons who believe that this conduct involves the honor of the nation—and their motives are of the highest—do so from a misconception of what a commercial treaty really is. A commercial treaty is not a document like a promissory note, in which a promise is made for a consideration to do or perform certain acts. A commercial treaty is merely a statement, agreed to and signed by the agents of the contracting parties, of the terms upon which the contracting parties find it most desirable and most comfortable and most advantageous to have relations with each other. When either of the contracting parties finds that it is undesirable to continue such relations, it is right to give notice of such fact and terminate such relations.

And by inserting the free-toll provision in the Panama Canal act Congress merely gave notice, at least two years before it became effective, of its intention to abrogate that portion of the Hay-Pauncefote treaty. And the remission of tolls was not considered as a gift or subsidy to our domestic merchant marine, because it is well understood that competition between lines now in existence and those which will come into existence will lower the marine freight rates by precisely the amount of the remitted tolls.

What Congress then believed was that the lower the marine rates could be kept between the two coasts the better chance shippers would have of emancipation from transcontinental railroads and that farther inland would be moved the zone of competition between rail and marine rates. In other words, Congress believed that the remission of tolls was not to be so direct a benefit to the coastwise marine as to the merchants and consumers who pay the freights. The reason Great Britain protests against the remission of tolls is because her economists know, better than the great bulk of our people yet know, what an effect the Panama Canal is to have on our commerce with South America. That commerce is now largely carried by British ships, and her statesmen fear, and well

may fear, the effect upon her indirect carrying trade of the opening of the Panama Canal with free tolls to vessels of the United States. Even the prospect of this condition has given an impetus to American shipbuilding that it has never had since steel vessels were built.

The interesting, the suggestive fact is that for the first time since the era of iron steamships began American capital has now just begun to take an interest in marine investments. In the last year, for the first time in our history, steam cargo vessels built in American shipyards, officered by American citizens, flying the American flag, have been chartered to carry American products to European ports. Great Britain has bested us in the past, with commercial treaties cleverly drawn, because the eyes of her plenipotentiaries have been fixed upon marine advantages, while our attention has been monopolized by the undeveloped resources of our land. But this will not be true much longer. We are just beginning anew to struggle with Great Britain and with Germany for the commerce and the carrying trade of the world. And no paper conventions, made without valid consideration and at a time when our envoys did not realize our needs, must be allowed to hamper the destiny of the great Republic.

STEVEN B. AYRES, U. S. House of Representatives.

HAMBURG-AMERICAN LINE'S NEW SERVICE TO THE PACIFIC COAST NOW AN ESTABLISHED FACT

The Hamburg-American Line, which now has more tonnage under one house flag than any other company in the
world, has announced its plans for a new service to
be known as the Hamburg-American Line Trans-Pacific
Freight Service. Mr. Dudley W. Burchard, who for many
years past has been identified with shipping at the port
of Seattle as Puget Sound agent for the Kosmos Steamship
Company, whose services extend to and from Hamburg,
Bremen, Antwerp, London, Genoa, Cadiz, ports of Mexico,
Central and South America, on both the East and West
coasts, is indeed to be congratulated on his appointment
as supervising agent on the Pacific Coast for the HamburgAmerican Line.

Mr. Burchard is considered by all shipping men particularly well fitted to assume additional and larger responsibilities and his new appointment will give him a promising opportunity to continue to show his capabilities in wider channels.

Seattle should rejoice that the Hamburg-American Line has established its headquarters at this port and surely this fact should make us justly proud. "Get ready for the Panama Canal" should still be dinned in our ears, inasmuch as we are beginning to see the eyes which have been and are being turned towards the Pacific Coast of the United States and Canada with a view to utilizing our ports as shipping points not only in name but in reality.

The new service of the Hamburg-American Line Trans-Pacific Freight Service is to be an extension of the European East Asiatic branch. There will be monthly steamers to and from Strait Settlements, Manila, Hongkong, Kobe, Yokohama, and connections will be made at Shanghai with the Hamburg-American's own line of coasting steamers (Imperial German Mail steamers), with sailings twice a week for Tsingtau, Dalny and Tientsin. The service will be inaugurated by the steamer "Sithonia," due in Vancouver about the 6th of May, Seattle and Tacoma the 9th, Portland the 13th, sailing from Portland the 19th, Puget Sound 25th, Vancouver 29th.

Mr. Burchard is to be supervising agent of the Pacific Coast, the other agents being as follows: Harold H. Ebey, 158 California street, San Francisco, Cal.; Fritz Kirchhoff, 832 Chamber of Commerce building, Portland, Ore.; C. Gardner Johnson Co., Vancouver, B. C.



FRANK WATERHOUSE & CO., INC.; MADE AGENTS FOR ROYAL MAIL STEAM PACKET CO.'S NEW SERVICE

The Royal Mail Steam Packet Company, the oldest and largest steamship company in the world, which started business in September, 1839, and owns the Union Castle Lines, operating between the United Kingdom and South Africa; the Elder Dempster Lines from Liverpool to Montreal, and from North Atlantic ports to Central America; the Pacific Steam Navigation Company, which operates between the United Kingdom and the West Coast of South America; the Glen & Shire Lines, running from the United Kingdom via the Suez Canal to Singapore, Hongkong, Manila, China and Japan; the Peninsula & Oriental Steamship Company, operating an enormous and magnificent fleet from Europe to India, the Orient and Australia; the Royal Mail Service proper, operating between the United Kingdom and Central and South America-decided to extend its European-Oriental service, which now terminates in Japan, to the ports in the North Pacific, Vancouver, Victoria, Seattle, Tacoma and Portland.

The first regular steamer scheduled to sail in this line is the twin-screw passenger and cargo steamer "Monmouthshire," sailing from London May 7th. In the meantime, however, to take care of pressing necessities, this company has chartered the steamer "Harpagus," 10,000 tons, to commence loading in Portland for the Orient April 12th, and an effort will be made to load a chartered steamer each month until the regular line starts with the "Monmouthshire,' loading on this coast the latter part of August, which will be followed by a regular monthly Royal Mail steamer thereafter.

Messrs. Frank Waterhouse & Co. have been appointed agents for this line to North Pacific ports.

It is most gratifying to the large number of friends and business associates of the ever expanding and successful firm of Messrs. Frank Waterhouse and Company, Inc., with headquarter in Seattle and agencies located in Tacoma, Portland, Victoria and Vancouver, B. C., and also at Chicago, Ill., to note that this enterprising shipping house has obtained the agency of the Royal Mail Steam Packet Company, which promises to become an important factor on this Coast with the opening of the Panama Canal.

The Pacific Marine Review extends to Mr. Frank Waterhouse, the president of Frank Waterhouse & Company, Inc., who with limited beginning has through his ability, tact and perseverance risen to a prominent position in shipping on this Coast as well as in the Far East, its sincere congratulations with best wishes for every success in the future.

T. K. K. MAKES NEW APPOINTMENT

Mr. Wm. H. Magee has been appointed general passenger agent of the Toyo Kisen Kaisha, with headquarters at San Francisco, vice Alfred E. Rennie, deceased. Mr. Magee was at one time in charge of the Pacific Mail passenger business under a former administration, and has since been handling transportation problems in all parts of the world.

He was in Mexico for a number of years in the service of S. Pearson and Sons. where he held a responsible billet on the Vera Cruz port Works, and later on the Tehuantepec railroad, with the same firm of contractors. He is familiar, through personal experience, with passenger transportation problems in all parts of the world and his appointmen insures the continued smooth working of this department in the affairs of the T. K. K.

Atlantic & Pacific Steamship Company

Although we have already made some reference to the contemplated service of this company, and the ships which they will operate, we think the following information, furnished us by Mr. M. Ford, sub-manager of W. R. Grace and Company, is of considerable interest as this service will be a valuable adjunct to the ports on this coast at which these steamers will call.

Mr. Ford reports that all four vessels are being built by Messrs. Wm. Cramp & Sons, at Philadelphia, and are intended for service between Atlantic Coast ports, San Francisco and Puget Sound for operation through the canal. It is planned to carry general cargo westbound and general cargo and lumber eastbound and in order to develop the lumber business a Pacific Coast lumber department has been organized in the New York office of W. R. Grace & Co., who have placed this in charge of Mr. Normand Vincent, formerly of Seattle.

The first steamer of this line will be the 7500 ton steamer "Santa Cruz," which was launched in Philadelphia early in November. This steamer will commence loading at Philadelphia about January 27th, sailing about February 1st, and will complete loading about February 5th, sailing direct for San Francisco via Magellan. The cargo is all booked for San Francisco and Puget Sound and the voyage to San Francisco will consume about 50 days. The steamer will be ready to return to Atlantic Coast ports, sailing from Puget Sound about April 25th and from San Francisco about May 5th and will be ready for return cargo from New York about July 1st, 1913.

She will be followed by the 10,000 ton steamers "Santa Clara," "Santa Catalina" and "Santa Cecilia," which will be completed in time to sail from New York during August, September and October, 1913, respectively.

These vessels are the latest improved type of cargo carriers, up-to-date in every respect and on completion of the canal will be operated on fortnightly schedule. Prior to that time they will be operated via Magellan.

In addition, the steamer "Santa Cruz" has very attractive first class accommodations for 75 passengers. These accommodations include private suites with baths and every convenience of the latest type of steamers.

S. S. "CLEVELAND" SAILS FROM SAN FRANCISCO

The S. S. "Cleveland," of the Hamburg-American Line, left the port of San Francisco February 6th, with 500 tourists who are touring the world on a pleasure cruise.

A similar party has just completed the world cruise aboard the "Cleveland," making 1,000, for the most part Americans, who have traveled this year by this world belt-line. The world cruiser carries no freight and serves as a floating hotel, carrying the globe trotters from port to port. Preparations are made for entertaining the tourists in every port visited, long in advance, so that the tour around the world is made free of all cares of travel. The first call will be made at Honolulu, when the "Cleveland" proceeds to Japan. A stay of 13 days is made at the various Japanese ports, including several inland trips. Next in turn comes a call of three days at Hongkong and Canton. After a call at Manila, the steamer proceeds to India, with calls at Batavia, Singapore and Rangoon. The visit in India covers 18 days, the tourists having the option of crossing overland to Bombay or making the trip by sea, calling at Colombo. On leaving India, the tourists sail through the Red sea, and pass through the Suez canal, visiting Port Said and Cairo. Stops are then made at Naples and Gibraltar on the way to Southampton and Hamburg, when the tourists embark for New York. Hamburg-American Line world cruises in 1914 will pass through the Panama Canal, thus making the around the world cruise by sea.



DEVELOPMENTS IN OIL BURNING BY E. H. PEABODY

N the adoption of the mechanical atomizer for spraying oil into furnaces we are merely following the lead of the Navy, for it may be safely said that without the stimulus given to the device and the new interest aroused in it by the activities of the navies of England and the United States there is little doubt that older methods would still be almost exclusively in vogue.

The "mechanical atomizer" so-called is understood to mean a device which sprays or atomizes oil or other liquids by means imparted to it by pressure alone, without the use of compressed air or steam or other exterior atomizing agent. Owing to its simplicity and to the fact that no fresh water is wasted, it is being extensively used in the merchant marine, and it has possibilities which I believe will ultimately bring about its adoption on shore.

To begin with, Commodore Isherwood's conclusions of some forty years ago hold good today; namely, that atomization of the oil, as distinguished from vaporization or gasification in the burner "is the only method that has been attended with success." There are not wanting those who still claim advantage for those forms of apparatus which, by various methods of treatment of the oil, admit the fuel to the furnace in the form of vapor. These systems, while successful in metallurgical work, have no standing in boiler practice for the reason that they show no gain in efficiency but, on the contrary, result in very poor capacity, the latter feature alone making them undesirable for marine use.

The well known Koerting process patent, taken out in this country in 1905, contains a claim which covers; heating the liquid oil unmixed with air or other gases to a point above its normal boiling-point, maintaining the oil in a liquid state by pressure and delivering the superheated oil into a combustion chamber supplied with air, whereby the rapid disintegration and vaporization of oil in the presence of air are secured.

The idea here, as is more fully pointed out in the patent specifications, is that the heat stored in the oil at high pressure will cause the liquid to flash into vapor when released at low pressure, exactly as water, heated above 212° F. under pressure, would flash into steam if released to the atmosphere. This is an exceedingly ingenious way of converting at least part of the oil into vapor without atomizing it, but as a matter of fact no gain results from this partial gasifying of the oil.

It will be found from a study of fuel oils that, while the viscosity is tremendously affected by changes in temperature at the lower ranges, very little difference in viscosity results with heating or cooling as the temperatures approach the flash-point. A number of viscosity tests at various temperatures on a variety of oils were made for the writer by Mr. E. G. Bashore, and as a result it may be considered that with all ordinary oils, heating within 50° F. of the flash point will be sufficient to render the oil suitable for use with the mechanical burner, and in the case of many of the lighter oils even this heating is unnecessary, the oil being sufficiently limpid at ordinary atmospheric temperatures.

The only method of atomizing fuel oil mechanically which has attained any practical success is that wherein the oil is given a whirling motion inside the burner tip. There are two distinct means for doing this, first, by forcing the oil through a passage of helical form like a screw thread, and second by delivering the oil tangentially to a circular chamber from which there is a central outlet.

The idea of delivering the oil tangentially to a chamber

inside the nozzle is shown in a burner patented in England by Mr. Albert Edward Jones, in 1907 (Fig. 5). This invention as a matter of fact contemplates the use of a gas

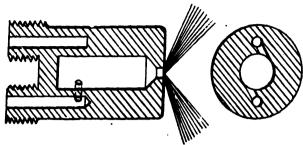


FIG. 5-JONES BURNER

or vapor in combination with a combustible liquid, and is not strictly what we consider a mechanical atomizer. but the device is almost a diagrammatic illustration of the tangential principle and for that reason I have reproduced it here. It may be considered that oil is forced into both tangential passages, or that only one is used, this depending only on the whirling motion of the oil to cause the spraying.

This matter of adjustability of an oil burner, that is, the ability to change the quantity of oil delivered in a given time without changing the oil pressure or the velocity of the liquid through the tip, while attractive in idea and perhaps well sustained in theory, has no particular value in practice. It is a fact that the simpler forms of burners which do not possess this feature are quite, if not more, successful in regular operation on shipboard. The manipulation of the oil pressure acting on all burners at once presents in itself a simple means for the control of output through a wide range; a good burner will atomize moderately heavy oil with an oil pressure as low as thirty pounds, and from that up to two hundred or above. If this range is insufficient to meet the variable steam requirements, then it is easier and better to shut down a portion of the burners entirely than to attempt to adjust each individual burner separately, particularly as it is important to regulate the quantity of air for combustion admitted to the furnace at the same time the quantity of oil is varied. This air supply can easily be controlled for all burners by regulating the draft pressure, and the air can be closed off entirely when a burner is shut down. This puts the question of proper air supply more into the hands of the designer, requiring the operator to determine only the proper conditions of draft pressure for the plant as a whole, at the required capacity.

It will be obvious, if oil is to be atomized by centrifugal force, that the best spray will be obtained by giving the oil the maximum whirling motion and reducing to a minimum the friction in the burner so that the whirling motion once obtained shall not be diminished before the oil is liberated. These are axiomatic principles, recognized by all, and no doubt each inventor believes he has best met the requirements.

It seems to me that the tests are these—that these are the controlling factors in the "survival of the fittest:"

- How heavy an oil will a burner thoroughly atomize?
- What pressure and temperature are necessary?
- What degree of simplicity has been attained in the design?

I might say here that any apparatus which will not handle heavy oil will have a very limited usefulness. Already the market is beginning to be supplied with very heavy oils from Mexico, there is considerable crude oil in

^{*}Abstract of paper read at the 20th general meeting of the Society of Naval Architects and Marine Engineers.

California below 15° gravity, and the tendency will be more and more to use the heavier residiums. I believe that in a few years we will be using oils.of 12° to 15° Baume as commonly as we are consuming oil of 27° and 30° gravity today.

The Babcock & Wilcox Company recently received from the Texas company, for experimental purposes, some Mexican crude oil having the following characteristics:

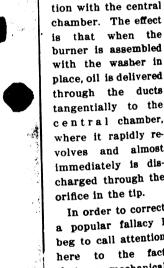
Specific gravity at 60° F	.981
Degrees Baume at 60° F	12.6
Moisture and silt	3.5
Flash-point	310
Burning point	347
B. T. U. per pound (oil as received)	17,551

In appearance this oil was black and at temperatures of about 80° very sticky and viscous. On heating to 212° it turned to foam owing to the presence of so much water, and this failed to separate out, a sample of the oil being thinned down with ether to determine the percentage. Ordinary settling tanks would have been practically useless as the oil was so near the specific gravity of water. This oil was, however, successfully sprayed and burned under natural draft, on being heated to 270° at a pressure of 165 plain that the best way to reduce friction is to reduce the amount of surface to which the oil is exposed in its travel through the burner after it begins to whirl and until its exit from the tip. We have also come to attach great importance to simplicity in everything connected with oil burning and believe that the oil burner itself should be of simple construction, easily taken apart, and so designed that when taken apart all the small passages and wearing surfaces will be exposed for inspection, cleaning and repair.

The results of the writer's efforts to construct a burner to meet these requirements are shown in Fig. 9. Cil is delivered under pressure to an annular channel cut into the face of a nozzle upon which is screwed a tip having a very small central chamber communicating with a discharge orifice. Between the nozzle and the tip a thin washer or disc is inserted and held firmly in place. This has a hole in the center corresponding with the diameter of the central chamber of the tip, and small slots or ducts, extending tangentially from the edges of the central opening outward toward the periphery of the washer, long enough to overlap the annular channel of the nozzle and

put it in communica-

In order to correct a popular fallacy I beg to call attention here to the fact that no mechanical atomizer



produces a revolving spray, but the particles of oil fly off in straight lines under the influence of centrifugal force, thus forming a hollow, conical spray. The fineness of this spray, i. e., the minuteness of the particles forming it, has a most important bearing on the results obtained in the furnace. It is possible with some forms of steam atomizers to atomize oil so finely that no flame at all will be produced, the incandescent combustion chamber being filled merely with a clear, invisible gas and every brick being discernible.

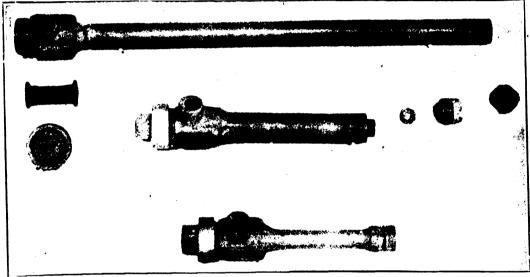
reason that it costs too much. With the production of flame, however, furnace design assumes an added importance, for the flame must be distributed evenly and without localizing on the heating surfaces of the boiler, and the gases must be given time and space in which to expand and burn as nearly as possible to completion before being cooled and the flame extinguished by contact with the tubes of the boiler. These points become exceedingly vital when the boiler is forced to the requirements now demanded in naval service.

I doubt if this condition of flameless combustion can be

produced with mechanical atomizers and heavy oil, nor

is it desirable under any circumstances for the simple

Having completed preliminary experiments with the atomizers in connection with a fire-brick oven built for the purpose and entirely separate from a boiler, the apparatus was removed to The Babcock & Wilcox Company's



PIG. 9-PEABODY MECHANICAL ATOMISER

Specific Pounds per

pounds. A slight amount of smoke was formed which disappeared on a slight increase in the furnace draft above twelve-hundredths inches of water. The most noteworthy feature of the experiment was that the capacity fell off about 40 per cent from that obtained with the same apparatus with oil of 18° gravity.

This sample of oil was the worst the writer has ever seen, but they say there is more of it and it is a specimen of what we may have to handle in the near future.

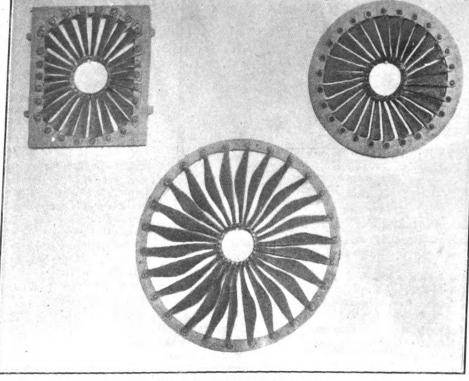
Density of Oil.

	Special	I ounds per
Degrees Baume.	Gravity.	Gallon.
12	.986	8.22
14		8.11
16	.960	8.00
18		7.90
20		7.80
22		7.70
24	.913	7.61
26	.901	7.51
28	.890	7.42
30		7.33
32	.869	7.24
= -		

The above table of densities is given for convenient

In the light of our experiments begun in 1907 we have come to believe that the best rotative effect on the oil is produced by the tangential delivery method, and it seems

dock at Bayonne, N. J., where the steam yacht "Idalia" was moored preparatory to being laid up for the season. This vessel is fitted with a Babcock & Wilcox marine boiler containing 2,560 square feet of heating surface and 340 square feet of superheating surface. A simple and effective system of induced draft fans is installed capable of giving a suction in the uptake of 1 to 11/4 inches of water, and in addition to this a forced draft fan was set up on the dock and connected by means of a flexible duct to a sheet steel casing enclosing the oil burners on the front of the boiler. The tanks and scales for weighing the oil and water, and the oil pump and heater were set up on the dock and connected with the vessel by means of flexible pipes, the regular feed pump of the plant being used taking weighed water the filter box. engine and other auxiliaries



PIG. 11-IMPELLER PLATES

were not in use, the steam being discharged to the atmosphere through a muffler so arranged, however, as to maintain regular working pressures on the boiler. All precautions were taken to prevent leaks and secure accurate data.

. The object of these tests was to burn oil with mechanical atomizers, to burn as much oil as possible without smoke, and to secure the best possible evaporation per pound of oil.

Fifteen evaporative tests were made under a variety of conditions. In between these tests considerable experimenting was done with various air-distributing arrangements, flat-flame burners, etc. The best performance was an evaporation of 7.47 pounds of water per square foot of heating surface per hour from and at 212° at an efficiency of 82.8 per cent at a rate of combustion of 6.17 pounds of oil per cubic foot of furnace volume per hour, with a draft in the uptake of .84 inch of water. The air in this test was admitted to the furnace through what we call an impeller plate (Fig. 11). Beginning with the cast iron cone with air shots on the side as shown in Fig. 17, various other air distributors were tried, but none of these seemed to promise as well as the impeller, either as to smokelessness, gas analysis, ignition of the oil, or noise.

Wyoming Tests.

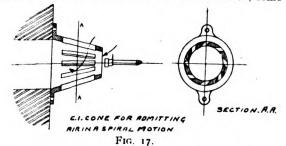
Coal.—The contracts for the United States battleships "Wyoming" and "Arkansas" called for a series of four 24-hour guarantee tests with coal, the first to be at a rate of combustion of 15 pounds, the second at 25 pounds, the third at 35 pounds, and the last at 40 pounds of coal per square foot of grate surface per hour. The idea was to duplicate a possible severe war condition, and it was required that the evaporation per pound of combustible in the final test should not be less than 11 pounds of water from and at 212°. This requirement was increased to 11½ pounds for the next contract after obtaining the excellent results in the tests on the "Wyoming" boiler.

As both the U. S. S. "Wyoming" and the U. S. S. "Arkansas" were fitted with Babcock & Wilcox boilers, and as both these ships were to burn oil in combination

with coal, it was decided to build a special test boiler of exactly the same design and proportions, except that it was not as wide, set this up at the works, with an airtight house around it, force air into this house under pressure to duplicate the conditions of a closed fire-room on board ship, and after making the guarantee tests with coal continue the experiments with oil, and with oil and coal in combination. This plan proving acceptable to the Engineer in Chief of the Navy, the boiler was built and tested under guarantee conditions by a board of naval officers, of which Capt. C. W. Dyson was the senior member.

Preliminary Tests with Oil Fuel.—After the completion of the coal tests the boiler was thoroughly cleaned of soot and ashes, fire-bricks were laid on the grate bars, and the front was arranged to receive the oil burners and air-distributing device.

While the results of the "Idalia" experiments had been promising it was desired to materially increase the capacity, .45 pound of oil per square foot of heating surface and about 6.2 pounds per cubic foot of furnace volume having been the maximum in those tests. In this we were assisted by the fact of having available a strong closed fire-room draft and a powerful steam jet in the stack. Much experimenting was, however, found necessary, almost entirely in the direction of air admission and distribution, some two



months being devoted to preliminary trials of various forms of apparatus.

Again the flat-bladed impeller plate was found to be most suitable, a number of different designs of this being tried

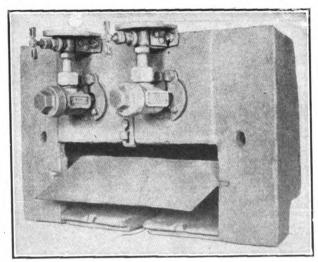


FIG. 12—PITTING OF OIL BURNERS FOR COAL AND OIL—PRONT

out, among which may be mentioned one having adjustable blades.

Finally, with the grate bars in place, six burners and impellers were installed, two in each fire door, and a test was made resulting in a combustion of .72 pounds of oil per square foot of heating surface and 11.6 pounds per cubic foot of furnace volume, a very distinct advance over the "Idalia" performance.

The grate bars were then removed, the ash pan lined with fire-brick, a second row of burners installed below the first, and efforts to obtain still higher capacities were continued. The experiments indicated that a considerable number of smaller burners and impeller plates was preferable to a few of larger size, and the furnace front was remodeled and fitted with eleven cast-iron boxes 13 inches square, each carrying an impeller plate 8 inches in diameter and each arranged to receive a burner. With nine of these burners in operation an evaporization of 13.16 pounds of water per hour from and at 212° per square foot of heating surface was obtained, burning .85 pound of oil per square foot.

The report of the board concluded as follows:

"The board was particularly impressed with the excellent results obtained with this boiler under the maximum rate of combustion, Test No. 1, which gives a combustion of 13.69 pounds of oil per cubic foot of furnace volume. This is the equivalent of about 75.34 pounds of coal per square

foot of grate area in the same boiler when burning coal. The boiler in this test steamed freely with a very slight increase in the wetness of steam, and the falling off of efficiency was small for a rate of combustion much above the maximum ordinarily used on boilers of the Navy under forced-draft conditions.

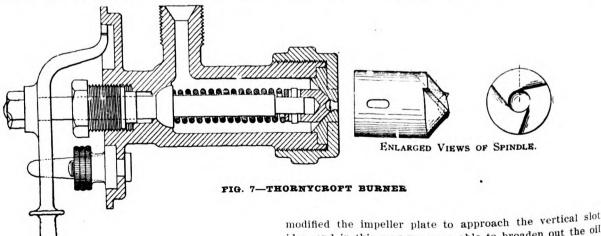
"After all the tests were completed the boiler was opened, cleaned and thoroughly inspected for deterioration. No tubes showed any signs of distortion, and all tubes and headers were free of blisters. All baffles were in good condition and properly placed."

It may be interesting to note that the wetness of steam referred to in the board's report did not exceed as a maximum 81 hundredths of 1 per cent.

Oil and Coal in Combination.—The writer does not believe that two such different fuels as coal and oil can be burned in the same furnace at the same time with results in efficiency equal to those which can be obtained with either fuel alone. The problem, always difficult, of securing complete combustion of the volatile hydro-carbon becomes more difficult, and one fuel inevitably interferes with the other.

The injection of an oil spray over a coal fire is, however, a most effective way of boosting up the capacity of the boiler and for this purpose the combination has a wide field.

As noted above, the United States battleships "Wyoming" and "Arkansas" were to burn coal and oil in combination. Consequently after completing the oil tests we turned our attention to the best method of getting the two fuels to work together. Obviously the most satisfactory location for the burners is between the fire doors. But owing to the fact that the ash pan, grate bars, and bed of coal and clinker on the grates combine to take up considerable space, there is bound to be a somewhat limited head room in the furnace. For this purpose the flat spray burner is well adapted, but the flat spray mechanical atomizer, as so far developed, does not at satisfactory capacities give as fine a spray as the round or conical spray atomizer. It is, however, possible, as we have found by experiment, to alter the shape of the flame from the round flame burner by manipulating the air for combustion. Thus, if the air be admitted through a horizontal slot, the flame will be diminished in width and increased in height, and, vice versa, if the air be admitted through a vertical slot the flame will be spread out sideways and decreased in height. The latter effect is what is desired in the combination of coal and oil. Consequently, while still retaining the whirling motion of the air, which we have found effective, we



modified the impeller plate to approach the vertical slot idea, and in this way we were able to broaden out the oil flame over the coal bed so as to burn .6 pounds of oil per square foot of heating surface per hour in combination with a rate of combustion of 25 pounds of coal per hour per square foot of grate surface. This device is shown in

10

Fig. 12 and Fig. 13. The space between the fire doors is occupied by a casting designed to carry two impellers side by side, each of an oval form as indicated. This casting is air-cooled and is provided with slide ways so arranged as to permit of substantial cast-iron shutters being pushed up in front of the impeller plates when the burners are not in operation, thus effectually shielding the impellers and the burners themselves from the radiant heat of the furnace. The burners and impellers therefore remain constantly in place while burning coal, and it is only necessary to put pressure on the oil line, slide the shutters down out of the way, and turn on the oil when the latter is needed.

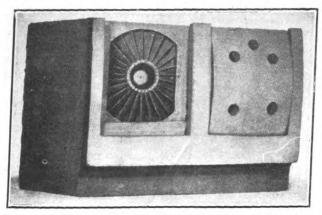


FIG. 13-FITTING OF OIL BURNERS FOR COAL AND OIL--REAR

If it is desired to operate with oil fuel only, the coal fire is allowed to go out, leaving the grate bars covered with ash and clinker to protect them from the heat, and the oil burners are lighted exactly as if no coal was used at all.

Natural Draft .- In the experiments described above forced draft had been available, and there is no doubt that the high velocity of the air thus secured is a material assistance in securing the proper mixture with the oil spray. It is often desirable, however, to run under natural draft conditions, particularly when the vessel is in port. For this reason a supplementary series of experiments was inaugurated for the purpose of adapting the apparatus to the requirements of lower draft pressures.

The principal changes found necessary were a modification of the shape of the blading and an increase in size of the impeller plates.

While I have indicated some of the various air-distributing devices used in the experiments above described, it seems advisable to group these together with illustrations of some of the principal types which have been tried out.

Great delicacy is required in introducing the air for combustion, very slight changes affecting the results in unsuspected ways, and while almost any method may result in smokeless combustion, maximum economy and capacity can only be secured by careful and intelligent design.

It is not necessary to give the air a whirling motion but, judging from our rather exhaustive experiments, better gas analyses are secured, lower air pressures are required, and less refinement of adjustment is needed if the air is brought into contact with the oil spray with the right sort of a twist. We have found the impeller plate illustrated in Fig. 11 most effective in accomplishing this mixture, and our most satisfactory results have been obtained with it.

The gratest ocean depth known is 5,269 fathoms or 31,614 feet; it is in latitude 12° 43′ 15" N., longitude 145° 49' E., about 75 miles ESE of the Island of Guan. This depth was obtained November 14, 1899, by the U.S.S. "Nero," when running a line of soundings to locate the Honolulu-Midway-Guam-Manila cable.

THE DIESEL ENGINE FROM THE USER'S STANDPOINT

The Diesel engine is coming into such general use for the purpose of generation of electrical energy that a few notes on its advantages, cost of running and maintenance, may be of interest. Mr. Wm. J. U. Sowter read a paper recently before the Dublin local section of the Institution of Electrical Engineers. A few abstracts of the paper published in the Canadian Engineer and which are of particular interest follow:

Although several papers have been written on the subject, most of the conclusions arrived at are based on estimated results, and it is, therefore, the intention of the author to discuss the matter from the user's standpoint, quoting as far as possible results obtained in actual practice.

The following is a specification of a suitable oil which the author has adopted with satisfactory results:

- 1. The oil shall be either crude, refined or a residue of petroleum.
- 2. It shall be free from tar, bitumen or solid hydro-carbons; it shall be also free from sand, fibrous matter, or foreign solid impurities.
- 3. The oil shall not contain more than one-half of 1 per cent of water, nor 11/2 per cent of sulphur, and shall be free from acid.
- 4. The viscosity shall be such that the oil will flow in a continuous stream with 1 ft. head through a 1/2-in. copper pipe 6 feet long without pre-heating.
- 5. The calorific valves shall not be less than 18,000 B.t.u. per lb.

Many other liquid fuels may be used, such as residue shale oil, gasworks tar oil, or creosote oil.

Running Costs.-Contrasted with steam plant, there is but little difference in fuel consumption per B.H.P.-hour between large and small Diesel engines, nor does the fuel consumption increase largely per unit of energy as the load is decreased on the engine. It is well known that a large steam engine running at light load is grossly inefficient, the fuel required to maintain steam pressure in the boilers and to run the engine light, together with the necessary auxiliaries, being out of all proportion to the work done; also, a small steam engine requires many more pounds of steam per h. p. to run it fully loaded than does a large one. In addition to these considerations there is the serious question of stand-by losses, which are very great indeed with steam plants, while they are absolutely non-existent where the Diesel engine is used.

It is apparent from the foregoing remarks that it is unnecessary from the point of view of fuel economy to install large engines when a greater number of small engines will suit the circumstances of any particular case better, desirable as the former procedure may be so far as capital cost per kilowatt of plant installed is concerned.

The following figures show the cost of fuel per unit generated with oil at the prices mentioned, and at various loads, for a 50-B.H.P. engine coupled to a 33-k.w. generator: Dynamo Price of Fuel Per Ton

Effici	iency			on.
	Cent. 40s.	50s.	60s.	70s.
Full	88 0.161	0.201	0.242	0.281
Three-quarter	86 0.178	0.210	0.252	0.295
Half	83 0.208	0.261	0.314	0.365
Quarter	78 0,307	0.384	0.462	0.538

Load

These figures are not merely manufacturer's "paper" figures, and the author is in a position to vouch for them personally, he having obtained similar results after repeated tests at irregular intervals. On larger plants the cost would be some 10 to 20 per cent better, depending upon the size of the plant.

Figures such as the above clearly demonstrate the great

advantages this type of plant offers for use in small generating stations.

Capital Cost: The capital cost of a Diesel engine direct-coupled to a generator is considerably greater than a gas or steam-driven generator of similar capacity, but when the costs of complete plants, comprising either gas or steam, are compared, there is but little differences in the price per kilowatt. A Diesel station, however, requires less land and building than similar stations employing steam or gas plant, so that the difference, if any, is in favor of the Diesel plant.

The following are approximate prices for small plants, delivered and erected on purchasers foundations complete with all oil storage tanks, piping, etc., and may be taken as fairly representative:

Size in Kilowatts. 100	Price. 1,950	Price per Kilowatt. 19.5	F. O. B. Works. 1,240	Weights. 19450 lbs.
150	2,600	17.3	1,770	23,250 lbs.
200	3,260	16.3		
300	4,380	14.6		
400	5,300	13.3		

SUGGESTIONS MADE TO CHANGE LIGHTS IN VICINITY OF MARROWSTONE POINT

In view of the fact that within the past two months there have been two cases of vessels grounding between Point Wilson and Point Hudson (Strait of Juan de Fuca) because of mistaking, in one case, the fixed red light on Fort Worden wharf for the light on Point Hudson, and in the other case, mistaking the Point Hudson light (fixed red) for the light on the Quincy street wharf, Port Townsend, the Hydrographic Office recently brought this matter to the attention of the lighthouse inspector for this district suggesting that some change should be made in the character of the light at Point Hudson. It was also pointed out to the lighthouse inspector that the light on Marrowstone Point is fixed red.

In reply the lighthouse inspector stated as follows: "The difficulties which ship masters have had in distinguishing between the several red lights in the vicinity of Marrowstone Point will be obviated, if the appropriation requested by the Lighthouse Service for this district for the ensuing fiscal year is made by Congress. It has been recommended and the bureau has approved a powerful double flashing acetylene light for Marrowstone Point. This will be established as soon as practicable after the money becomes available."

While the improvement to the Marrowstone Point light will undoubtedly be of considerable value, it is thought that vessels entering Port Townsend harbor from either direction would be better guided if the Point Hudson light should be improved in character, so as to be easily distinguished from the wharf lights mentioned above.

An expression of opinion in this matter from ship masters and officers interested would be appreciated by the Branch Hydrographic Office at Port Townsend.

While on press the following has been received from the Hydrographic Office.

"This office has been advised by the Lighthouse inspector for this district, with Headquarters at Portland, Ore., that the question of improving the fog signal at Marrowstone Point (Admiralty Inlet) is still pending. The inspector states that 'on account of its close proximity to the Point Wilson fog signal, which is shortly to be changed to a first class compressed air siren, it is not clear that a signal more efficient than the bell is needed at that place.'

"The files of this office show that in 1908 the matter of an improvement to the Marrowstone Point fog signal was taken up with shipmasters and pilots and that it was practically the unanimous opinion that the fog bell was decidedly inefficient. The lighthouse board recommended

the installation of a third class Daboll trumpet, but Congress failed to appropriate the necessary funds. It now appears to be evident that there has been a change of opinion on the part of the Lighthouse Bureau and that agitation will again be necessary if any change is to be made in the fog signal at Marrowstone Point.

"In view of the improvement in the Point Wilson fog signal, expressions of opinion are earnestly desired regarding the Marrowstone Point fog bell."

OPENING OF NAVAL RADIO STATIONS IN ALASKA TO COMMERCIAL BUSINESS

The following naval radio stations were opened for commercial messages on January 15, 1913:

St. Paul (Pribilofs), Dutch Harbor, Unalga, Kodiak, Cordova and Sitka.

Messages will be accepted from ships at sea at any of the above-mentioned stations for local delivery, or for any other of the above, at the rate of 5 cents per word.

Communication between Sitka and Cordova will be made at War Department cable rates.

Messages from ships at sea addressed to points in the United States will be charged for as follows:

From St. Paul (Pribilofs), Dutch Harbor, Unalga and Kodiak to all points in the United States, except California, via North Head, Wash., Radio station, 25 cents per word, plus the Western Union word rate to destination.

From St. Paul (Pribilofs), Dutch Harbor, Unalga and Kodiak to points in California, via the Eureka Radio station, 30 cents per word, plus the Western Union word rate to destination.

A message intended for any point in the United States, except California, will be sent by radio to North Head through any station able to handle the work, relayed if necessary. A message intended for California will be sent similarly by radio to Eureka.

The word rate for messages to points in Alaska on the War Department cables or telgraph lines will be 5 cents, plus the cable rate from Cordova or Sitka, if sent through Kodiak, Cordova or Sitka, or 10 cents per word, plus the radio and telegraph rate beyond Nome, if sent through Unalga, Dutch Harbor, or St. Paul and Nome.

Messages for Nome, St. Michael, or points in the interior of Alaska, to be sent by radio to Nome, will be accepted at Unalaga, Dutch Harbor and St. Paul only.

The word rate for messages to be sent to the United States via War Department cable will be 5 cents per word, plus the cable rate from Cordova to Seattle (24 cents), plus the land line rate to destination, whether sent through Cordova or Sitka stations.

All the rates given above are in addition to the ship

Messages for ships will be accepted from land lines and from War Department cables, land lines and radio station at Nome at the rates given above, if fully prepaid, including the ship rate.

Fully prepaid messages addressed to ships in Alaskan waters and to Alaskan points will be accepted at North Head and Eureka from the public or by land wire for transmission by radio at the rates mentioned above.

In all cases the minimum charge will be for a radiogram of ten words.

All Alaskan stations will use a wave length of 600 meters only in communication with ships, with the following exceptions:

First—Dutch Harbor, 600 meters, normal; 300 meters at certain times of which ships will be advised. Unalga, the controlling station, about 18 miles distant, will use 600 meters

Second—Ships fitted to send at 1,800 meters may get into communication at long range by requesting a station



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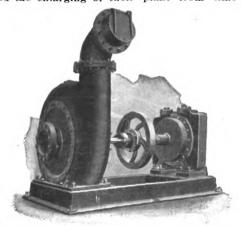
Seattle, Wash.

to listen for calls at a certain hour on that wave length (or "tune") and to use that wave in sending.

Ships must use the wave length of the station in com-

DAKE ENGINE COMPANY'S NEW CATALOG

The Dake Engine Company of Grand Haven, Mich., have just issued their 1913 catalog descriptive of their line of pilot house steam steering gears, capstans, windlasses, deck hoists, etc. The demand for their machines has necessitated the enlarging of their plant from time to time.



This year some new machines have been added to their already extensive line, such as hoists for raising gang planks on river steamers, steam winches for warping purposes, direct connected centrifugal pumping sets, drill hoists, etc. This catalog will be forwarded to any one interested in equipment of this kind.

SALE of U. S. S. "Nipsic."—Sealed proposals will be received at the Bureau of Supplies and Accounts, Navy Department, Washington, D. C., until 12 o'clock noon, February 24, 1913, when they will be publicly opened, for the purchase of the "Nipsic." appraised value \$2,000, The vessel will be sold for cash to the bidder offering the highest price above the appraised value. Forms of proposal and bond, and information concerning the vessel and the terms and conditions of sale, may be obtained upon application to the Bureau of Supplies and Accounts. The vessel may be examined at the Navy Yard, Puget Sound, Wash, BEEKMAN WINTHROP, Acting Secretary of the Navy. 1-10-13.

S. S. "PRINCESS MARY" TO BE LENGTHENED

Captain J. W. Troup, manager of the B. C. Coast Steamship Service of the C. P. R., is now in England and will not return for the next month or six weeks. As Captain Troup passed through Montreal he was in consultation with the executive of the C. P. R. there and it was decided to lengthen the S. S. "Princess Mary." However, no details are now available and no steps will be taken to begin this work until Captain Troup returns.

Mr. H. R. Williams, who for some years past has held the position of president of the Puget Sound branch of the Chicago, Milwaukee and St. Paul Railway Company, has been promoted to vice-president in charge of the New York office. He has also been elected a member of the board of the St. Paul company, as well as a member of its executive committee and will have charge of financial matters hereafter.

H. E. MOSS AND COMPANY ISSUE SEMI-ANNUAL STEAMSHIP REVIEW

"In our semi-annual steamship circular of January, 1912, we stated 'we fully expect that during that year and 1913 steamship owners would reap a reward such as they have not experienced during the last decade.'

The results of the year just passed, without doubt, have been for steamship owners in particular beyond the dreams of avarice, and though during the past few weeks there has been a marked set-back in freights, and a corresponding falling-off in the demand for the purchase of ships, we are of opinion it is only temporary, and that early this year, freights will again improve, and though they may not reach the extraordinary level of last autumn, they will, we feel sure, satisfy the expectations of all concerned. lt is easy to conceive that the reason for the recent decline in freights was brought about mainly by the present unsettled state of affairs in the Near East, and the brief strike on the North Eastern railway at Newcastle, which latter, though only of a week's duration, dislocated business, and threw tonnage on many markets quite unexpectedly.

Our board of trade returns for 1912 will, we anticipate, record an improvement of considerably more than £100,000,000 over 1911, and are still bounding upwards. Trade at home and abroad never was better. In America, it is on the upward grade, and likely to still greatly improve, which will reflect on Europe and help to absorb the large amount of tonnage building, which to a great extent consists mostly of liners and tankers, in the delivery of which many builders have been very late through the difficulty in obtaining material and the scarcity of skilled labor. These facts, together with the approaching opening of the Panama Canal cause us to take the hopeful views we have expressed.

The amount of tonnage launched last year in the United Kingdom will prove to be about 2,000,000 tons, and we should not be surprised if these figures are exceeded when the returns for 1913 are known. Such, however, has been the extraordinary increase in the requirements of the world, that the new tonnage built last year has all been quietly absorbed, and for some time to come that under construction, we anticipate, will be similarly disposed of.

With very few exceptions, builders are full of orders for all this year, and many well in 1914. Prices for building new steamers have, during the past two years, continued to advance, and are likely to be higher, as we anticipate a still further increase in the cost of production. Steamers of 7,500 tons deadweight which cost £38,000 to £40,000 two years ago, would now cost about £56,000, so that the advance may be computed on new shipping at about 40 per cent within two years, and with the large amount of naval work about to be placed, we do not see any prospects of a marked reduction in the cost of building new ships for some time to come. Many far-seeing owners who contracted for new steamers some time ago have realized huge profits ranging in some instances between £15,000 to £20,000 per boat, and in several cases much more. The prices obtained for second-hand tonnage have increased proportionately, and the number of sales made in 1912 has been beyond record.

The principal features of the past year have been the realization of the great demand for oil fuel, which with the coming of the internal combustion engine, bid fair to revolutionize before many years are passed, the present mode of steam propulsion."

FREIGHTS AND FIXTURES

The special monthly freight report prepared for this pub-

lication by Messrs Hind-Rolph & Company of San Francisco, is published herewith:

"The year 1913 has, from an owner's point of view, opened in a very promising fashion. The slackening off in rates, which was quite evident towards the end of last year in European markets especially (though not on this coast), has quite disappeared, and those best qualified to judge appear to think that we are in for strong freight markets for at least the rest of this year, though possibly there will not be any such boom as was experienced in 1912. As regards the Pacific Coast market, rates are very firm and some of the recent fixtures effected have been quite as good, if not better, than anything done previously, and we look for a continuance of this state of affairs.

The most interesting fixtures to advise are as follows:

Sailers

"Forest Home"—Lumber, Callao 60/.

"Hawaii"—Lumber, Callao 62/6; option direct Nitrate port 63/9.

"Mimi"-Lumber direct Nitrate port 61/3.

"M. Turner"—Lumber Val. F. O. P. R. 65; option New Zealand 65.

"Crown of India"—Lumber direct port U. K. 63/9.

Steamers

"Artemis"—Time charter delivery and redelivery Pacific Oriental round 6/9.

"Thor"—Time charter delivery San Francisco, redelivery Japan 9/-.

SALMON MARKET REVIEW FOR 1912

The demand for salmon of all grades has been very disappointing to importers, and may be ascribed to the absence of a hot summer, the presence of labor troubles, or to the high prices ruling. The producers claim that salmon is relatively good value at the prices which have ruled during 1912, and that argument is sound, but the fact remains that the consumers in the United Kingdom do not accept the view and insist upon regarding salmon in tins as a food to be used only when it is quite cheap, and then only as a make-shift for fresh foods. This view could perhaps be altered by education, but this process would be very expensive and not justified so long as the other markets of the world are willing to pay high prices. The tendency is for the cost of production always to increase, and the best thing for canners and associations of canners to do is to make certain that the goods produced are of a quality which will justify the consumer in paying the necessary price. A good deal might be done by extending the system of giving recipes for the making of dainty dishes with canned salmon as the basis. These recipes can be printed on the labels and will appeal to a better class of consumers than has hitherto been attracted by salmon in tins.

Alaska Reds.—On the arrival of the first of the 1911 pack, late in 1911, the price was nominally 29/6 or 1/- above the price paid by importers, viz., 28/6. The quantity available for market business was not large. Very little business was done at 29/6, no real move being made until June, when efforts were made to sell at 29/-. The results were not satisfactory and the price gradually receded to 28/early in August, still without attracting buyers. In September business was done at 26/9 and sellers from that date continued to force sales by meeting buyers in every way, with the result that 26/- was touched in early October, 25/6 in the middle of October and 25/- in November. On the arrival of the early shipments of 1912 pack in December, 1912, there were sellers at 24/6, and even 24/- was



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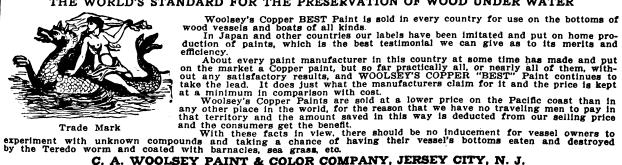
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suggested but without result. 24/- left no margin of profit to the importer, and the fact that good firms were suggesting the price shows the view which they rightly or wrongly took of the market.

1912 Pack.—The quantity of 1912 pack sold to the United Kingdom is estimated at about 350,000 cases, of which the bulk was immediately sold in the country at a merely nominal profit upon the importer's cost. No one seemed willing to be left with any stock if they could possibly avoid it, and if there should be any demand over and above the quantity sold for arrival the market must surely strengthen.

The 1912 pack will arrive upon very small visible stock, but the result of a careful canvass of the retail trade has forced the conclusion that there is a quite considerable quantity upon the retailers' shelves, and a good deal will depend upon the action of these retailers. If they write down their stocks to current values it should stimulate business.

Alaska Medium Reds.—Considerable quantities of 1-lb. tall tins were imported, but they have not been successful in attracting the country trade, and are largely still in importers' hands, although every inducement has been held out to the retailer to push their sale. They can be bought today at any reasonable bid which is made. This grade of fish does not seem to be wanted. It is not a substitute for red fish and is generally classed as having most of the disadvantages of Pink.

Alaska Pink Salmon.—The considerable quantities imported of the 1911 pack were mostly in store when the price was made for the 1912 pack, and in order to effect a clearance holders immediately lowered their prices to the 1912 level, thus writing off about 8/- per case including rent and charges. A good many were sold on the new basis but not for the grocery trade. The determined effort which was made by very many people to popularise Pink salmon was frustrated by the very indifferent quality which was shipped and the high price which was paid. As a matter of fact, the article had little merit at the price, and the public found no inducement to try to overcome their prejudice against the color.

British Columbia Sockeye Salmon.—1-lb. flats. From 32/6, the price at which 1911 pack commenced to be sold, the price has steadily risen until it is now about 40/-. There has been very little business to report because the number of users of 1-lb. flat at these prices is very small. There is not any general demand and it is very questionable whether the parity of 40/- is really paid by the grocer.

1-lb. talls have been too scarce to make a market. ½-lb. flats remained for several months at about the price made last January, viz., 46/-. They eased off a little to 45/- in the spring of the year and then gradually raised to 48/- and even to 49/- for small lots in the early autumn. This strong

spot position caused importers to buy 1912 pack at 45/and 46/- well before the packing was commenced. Sales were reported from Vancouver at even higher rates than these

The reports that the pack was likely to be good soon weakened the market, and although canners generally remained very firm there were enough sellers to bring the price down to 44/6 before the pack was completed, and parcels which were shipped unsold were disposed of at as low as 40/- in order to clear before arrival. Consignments still on the way are being neglected by buyers, and any undue pressure to sell would result in a still further decline which does not appear to be justified, bearing in mind that ½'s on a 40/- basis can be retailed at prices which the public appear to be willing to pay for a moderate quantity, and also bearing in mind that the absence of 1-talls and 1-flats of Sockeye fish throws the whole trade on to the ½-lb. tin.

There are no old stocks and provided dealers and retailers are allowed to have enough profit to make the trade interesting, there should be no difficulty in selling every existing tin before the 1913 pack is available.

Red Springs.—There have been some excellent parcels of this grade imported. They have given great satisfaction and have never been available for market purposes except at a premium upon importers' cost. Some spot parcels of 1/2-flats are still being held for 38/-.

Cohoes have varied very much in quality, and are available today at prices varying from 22/- to 30/- for 1-flats according to quality, and the variety of price is fully justified.

½-flats of this grade are still in importers' hand, and there is practically no demand for them. It is impossible to fix a value because there is no business passing.

Chums have been a very dull market for the past six months, in fact, ever since the importers of Pink realized that the home trade were not consuming their goods, and they consequently commenced to seek other outlets which had previously been taking the Chums.

Pinks.—The Pinks of the 1911 pack from British Columbia varied so much in quality that the market was quite disorganized. The good parcels were damaged by the indifferent ones, and many parcels are still intact, the holders not having found any outlet for them. There was a remarkable variety of quality of goods from the same cannery, and presumably packed with the same care, but at a different period of the catch. It is quite obvious that Pink salmon at its best is well worth attention, but at anything short of this it has nothing to recommend it to the home consumer.

1-lb. talls which were imported at 16/- were almost immediately after arrival and inspection forced out at about 14/6, and have since been offered at down to 10/-. ½-flats



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which were imported at about 25/- to 26/- remained at that figure for salable parcels: while irregular goods changed hands at about 24/- and have never found their way into consumption, but are still blocking the sale of the later arrivals of good quality.

The imports from all sources into the United Kingdom have been:

1906	about	1.233,000	cases
1907		501,500	••
1908		677,400	"
1909		823,300	
1910	4.7	1,428,000	**
1911,		850,000	**
1912		772,000	**

London stocks are a negligible quantity, and Liverpool stocks in public warehouse at the end of November were 152,070 as against 125,155 in November, 1911. The December arrivals will probably bring the Liverpool stock up to 140,000 as against 137,586 at the end of 1911.

The question as to the limit of price which the public will pay for salmon still remains unsolved, because the labor troubles and indifferent summer have undoubtedly adversely affected the demand for all canned goods this year.

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THE BUSINESS AND FINANCIAL OUTLOOK

During the past week the Fourth National Bank of the City of New York has sought the views of business men concerning the commercial outlook and the possibility of a slowing down in general trade owing to the uncertainty over probable tariff revision. As a result of this informal inquiry it may be said:

First: It is evident that business men of the country are not loking forward with serious forebodings to the new administration. It is expected that the President-elect will give a safe and sane administration and one calculated to build up rather than to tear down enterprise. This feeling is almost universally held.

Second: Uncertainty because of expected tariff revision is unquestionably holding up business in a few industries, but these are industries that would be vitaly affected by a lowering of the duties. The feeling of manufacturers is not at all one of fear that their business will be ruined, but, on the contary, the opinion is that revision will be conducted sanely and with a view to disturbing business as little as possible. The knowledge that the schedules are to be changed within a few months, however, leads naturally to some cautious buying. It is generally felt that the work of revision should be pushed as rapidly as possible so that the period of uncertainty may not be prolonged.

Third: Taking the country at large, it may be said that the area of disturbed business is relatively small, and such branches of industry as are affected represent but a small proportion of the whole. It is significant that from some centers where local industries would be affected by reduction, comes the assurance that tariff revision has been largely discounted, so that when new schedules are actually announced there will be little further adjustment required.

The disclosures of this investigation, therefore, go far toward refuting the theory that the country is witnessing a gradual slowing down of business in all lines. Such a theory is unfounded, and the information which this bank has received shows conclusively that general business not only continues good, but that merchants, manufacturers and corporation managers everywhere expect it to be much better.

From the South come assurances that labor is fully employed, that factories are booked ahead with large orders, and that, except for a small section where the crops have been bad or where local conditions have been unfavorable, the expectation is for a satisfactory year.

The lumber industry is active under the impetus of increased building and heavy railroad buying.

In the sugar territory there is naturally a feeling of uneasiness as to how the tariff provisions will affect that industry.

The record of bank clearings shows that the country is doing a larger business than it did last year, weekly figures indicating gains of from 10 per cent for the whole United States to nearly 15 per cent for the territory exclusive of New York City.

In a sense the country is now in a transition period and there is no doubt that the changes which are to be brought about will mark the absolute abandonment of many time-honored practices. Although such changes oftentimes lead to temporary complications, there is nothing alarming in the outlook, and the consensus of opinion among business men is that the new administration should be given a fair chance with reference to defining its policies.

While much has been said concerning radical legislation which will affect the banks, the money market and the various exchanges, it is doubted whether any law will be enacted without thorough consideration.

For the whole year of 1912 this country exported \$582,000,000 more merchandise than it imported. On only four other occasions—in the years 1898, 1900, 1901, 1908 has this record been surpassed. Under such conditions the present outflow of gold to Europe and South America seems to be wholly abnormal. Since the opening of the year the shipments of gold to Paris have exceeded \$9,000,000, and those to South America \$5,000,000, making altogether nearly \$15,000,000. The Paris shipments represent virtually the purchase of gold by the French market through the instrumentality of special inducements offered indirectly by the Bank of France. The Paris market has been seriously disturbed for months by the complications growing out of the Balkan war. It has been estimated that in Austria alone the people have hoarded \$150,000,000 in cash because of the fear that the disturbance would extend to the great European powers. In France and Germany, as well as in other countries, a vast amount of cash has been hoarded for the same reason, and this has brought about a situation where the foreign banks are obliged to materialy strengthen their reserves. To do this they are importing gold from the cheapest money market in the world, which happens to be the United States. Owing to the heavy return flow of dividend money to this country these gold shipments have caused no derangement in the local market.

As soon as Turkey formally accepts the terms offered for settling the war—which it must do within a short time—there will be a gradual return to circulation of the money that has been hoarded. This will, of course, relieve the foreign markets and bring about the normal conditions. Several large bond issues are under negotiation and a vast amount of new financing for the railroads and industrial corporations will be arranged for before long. It is probable that these requirements can be satisfied without difficulty, although when the movement is fully under way it is fair to expect somewhat higher rates for money than now prevail. There is still a total absence of stock market speculation, so that within the last few weeks there has been a very marked reduction in the volume of loans made to borrowers upon speculative securities as collateral.

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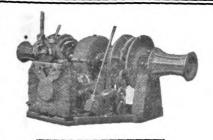
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MARINE INSURANCE NOTES

RE-INSURANCE

A decision of interest to underwriters generally was handed down in December by the District Court of Appeals, First District, in San Francisco. While this decision was in connection with fire insurance, yet the conditions are so close to re-insurance in marine underwriting that it will undoubtedly be used as a precedent.

It appears that the Caledonian Insurance Company reinsured the Royal Insurance Company on the contents of a building prior to the earthquake and fire in San Francisco in 1906. The original policy and the policy of reinsurance contained what is known as the "fallen building clause," which provided that if a building or any part thereof fell, except as a result of fire, all insurance should cease. The re-insurance clause read, "Subject to the same risks, valuations and conditions as are or may be taken by the re-insured and loss if any payable pro rata with the re-insured at the same time and place."

The building and contents were destroyed by the fire that followed the earthquake. The Royal Insurance Company adjusted the loss and paid its assured and sought to recover from its re-insurers. It was shown in the lower court that a material part of the building had fallen as a result of the earthquake and it was claimed that by reason of this both the original policy and the policy of re-insurance had ceased to cover. Relying apparently on the wording of the "re-insurance clause," judgment was given in favor of the Royal Insurance Co. and the case was appealed.

The Appellate Court in rendering its decision reversing the decision of the lower court, said, "The liability of a re-insurer, like that of a party to any other contract, must depend on the terms of his contract." That the fact that the original insurer had adjusted and paid a loss for which he was not strictly liable under the terms of his contract was not sufficient to bind the re-insurer even under the language of the re-insurance clause.

In marine insurance the re-insurance clause is even stronger than the one above quoted. It reads, practically: "Subject to such risks, valuations and conditions as are or may be accepted by the re-insured, and payment of loss, if any, to be made at the same time and place, in the same manner, in the same currency, and according to the same adjustment as accepted and paid by it."

This clause apparently places the re-insurer absolutely in the hands of the re-insured. That he may, after re-insurance has been effected, change an f. p. a. policy into one subject to average, and that if a loss has been adjusted and paid the re-insurer has no right to inquire into the validity of the claim as coming under his contract, but must pay as coming under the conditions of the re-insurance clause. There appear to be no decisions in the United States courts touching on this question but following the interpretation of the language, as laid down by many decisions, in a marine insurance policy, it does not seem that the re-insurance clause would give to the re-insured the broad privileges which its language implies.

In the case of the "Wm. Symington," High Court of Justice, King's Bench Division, 1902, it was held, in effect, that the settlement of a loss, not strictly a claim under the original policy, did not bind the re-insurer to pay. This steamer was insured on a valuation of £16,000, and it provided that the insured value was to be taken as the repaired value in determining whether or not the vessel was a constructive total loss. The line was re-insured with another company against the risk of total and/or constructive total loss only, but in the policy of re-insurance the clause regarding the insured value being taken as the repaired value was stricken out. The steamer was wreck-

ed, subsequently sold, and the original insurers effected settlement with the assured as of a constructive total loss. Action was brought to recover from the re-insurer. It was shown that had the policy not contained the "repaired value" clause there would have been a valid claim as for a constructive total loss and it was also shown that under the conditions of the policy with the "repaired value" clause there could have been no claim as for a constructive total loss.

The plaintiffs relied on the fact that the repaired value clause had been stricken from the policy of re-insurance and also on the re-insurance clause which provided that re-insurers would pay as might be paid by the original insurers. The court held, however, that the repaired value clause should be read into the policy of re-insurance, as being one of the conditions of the original policy and that the words "to pay as may be paid thereon" meant only to pay as the reassured may have been compellable to pay. As the reassured was not liable for any loss under the terms of his contract he could not hold the re-insurer for any amount simply because he had seen fit to pay.

The fire insurance case above referred to is likely to be appealed to the Supreme Court and opinion is divided as to the probable outcome.

MARINE INSURANCE IN 1912

The year which has just closed is likely to be remembered by the tragedy of the "Titanic," a loss which overshadows the whole business of the year and is understood to have upset the careful calculations of many underwriters. Former years are spoken of as the "Pericles" year, or the "Dakota" year, but while the total loss in either case was about \$3,750,000, the loss by the "Titanic" is estimated at \$10,000,000.

Apart from this, underwriters have good cause for congratulation in the standardization of clauses on cargo and in the joint agreement for increasing premiums on the hulls of steamers for twelve months.

For many years the necessity for standard clauses has been apparent but the difficulty was to get underwriters at Lloyds and in the companies to agree upon one particular form. After much negotiation a set of clauses termed "Institute cargo clauses" was agreed upon and came into force on the 1st of August last. The most important points were a clear definition of the underwriters' risk in the "warehouse to warehouse" clause and a new "F. P. A." clause which in some respects is much more favorable to the assured than many of the "F. P. A." clauses heretofore employed

The "Joint Agreement" was the successful outcome of some very clever diplomacy on the part of its originators. With an increase in the price of steamers and a further increase in the cost of repairs underwriters were finding themselves in an unpleasant position. The attempt made in 1911 to increase the rates of "tramp" steamers by 10 per cent and of liners by 5 per cent fell through, so negotiations were confined to steamers "other than recognized The arrangement was eventually carried through on the basis of an aggregate increase of 15 per cent in the values of a fleet (which could be apportioned as desired), together with certain options. For example, if the values were not increased the premium would be raised 10 per cent or there could be an aggregate increase of 10 per cent in the values and 5 per cent in the premium. On the other hand if the values were increased by more than 15 per cent an equivalent reduction would be made in the premium. There was a further stipulation of considerable importance requiring in all policies a disbursement clause limiting the amount to be placed on disbursements "to



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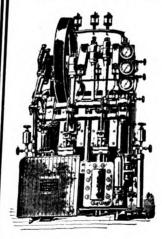
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15 per cent of the value of the hull." At the time of writing, the agreement has been loyally supported and there is every indication that it will prove of considerable help to underwriters during 1913.

PACIFIC MARINE REVIEW

Total losses and large claims on steamers during 1912 will exceed \$30,000,000. In 1911 there were about \$24,000,-000, while in 1910 the figure was \$29,500,000. It will therefore be seen that without the "Titanic" loss the normal total for 1912 would have been exceptionally low.

The highest individual losses sustained were:

Star of Canada	\$600,000
Foxley	535,000
Bayards	435,000
Koombana	550,000
Thistleroy	500,000
Lagos Floating Dock	335,000

There is of course the loss of the "Umegara Maru," valued at \$635,000, on which salvage operations are in progress.

As usual fire was responsible for some particularly heavy claims. The most important losses from this cause were the "Spondilus," \$437,000; "Consols," \$380,000; "Carmanie (claim), \$300,000; "Dunholme," \$275,000; "Ontario" (beached), \$275,000, and "Trundadian," \$175,000,

Fires in February at Houston, Texas, and Bombay resulted in the destruction of cotton valued at \$2,500,000, and \$1,250,000, respectively, while a fire at Dunkirk in October was responsible for a loss of \$400,000.

Salvage operations during the year have an unusually good record. The most important piece of work was the recovery of the bullion and specie from the "Cceana," which sank off Beachy Head after collision. The value was \$3,750,000, and with the exception of two bars of silver the whole amount was recovered by Captain Young, the principal salvage officer of the Liverpool Salvage Association. Although the "Empress of China" was floated, the settlement of the claim fell rather heavily on underwriters. The hull was insured for \$750,000 and there was an amount of \$250,000 on disbursements.

Underwriters on the hull policies paid 75 per cent and on the disbursements policies 25 per cent. The salvage operations cost \$180,000.

The most extraordinary salvage was that of the "Wilhelmina," wrecked in St. Mary's Bay, N. F., with a cargo of timber on board, where a strong southeast gale lifted her from an apparently hopeless position on the rocks and carried her into the bay, where she floated on her cargo and was eventually towed round to St. Johns. Other good salvages were the "Corn Exchange," quoted at 80 gs.; the "King Leed" at 75 gs., the "Domira," "Nero" and "Charles Racine" (ship) at 70 gs.; the "Crometheus," "Braemount," "Bengore Head" and "Royal George" at 60 The "City of Lahore," of the Ellerman Line, badly ashore on the County Down Coast, was very cleverly saved by Captain Young during a period of bad weather when the least delay would have proved fatal. Exceptionally good work was also accomplished in raising the "Newport," which sank at Balboa in August.

The overdue market was unusually active and there were a good many arrivals after high rates had been paid. The steamer "Richmond" was uninsurable when she reached Bermuda after being towed 460 miles. The "Birchtor" at 75 gs., the "Africa" at 70 gs., the "Abydos," "Indra" and "Kommodore" at 65 gs. and the "Lord Curzon" at 45 gs. were all good arrivals, while at the end of the year several steamers in the North Atlantic on which rates up to 30 gs. had been paid, owing to a severe hurricane, safely reached port. Against this must be recorded the fact that the number of missing vessels was considerably above the average. In 1910 there were nine steamers and in 1911

the figure was again nine steamers. In 1912 the number reached 18 steamers over 500 tons register and of these seven were over 3,000 tons register, the largest being the "Maroa" of 6,809 tons, while as the year closes two more steamers, the "Whittinghame" and "Snowdon Range," are hopelessly overdue. Only four large ships, the "Gulf Stream," "Orla," "Queen Victoria" and "Nomia" were actually posted at Lloyds but some others were missing although not posted.

Salvage awards in the Admiralty Court totalled over \$400,000 against \$283,955 for 35 cases in 1911, and \$372,560 for 38 cases in 1912. The largest individual salvage was earned by the "Cundall." which received \$25.000 for towing the "Richmond" to Bermuda, but three London tugs received \$21,850 for assistance rendered to the ship "Gudrun" on the Goodwin Sands, and the small steamer "Balmore" was awarded \$20,000 for towing the "Delphine" to Lisbon.

A very important development in salvage operations was the establishing of a salvage station at Southampton by the Liverpool Salvage Association, where their steamer "Dinnet" is now berthed in charge of Lieut. Dathan, R. N., one of their special salvage officers. With the "Ranger" at Holyhead and the "Linnet" at Southampton the association is able to act promptly in case of a wreck on the West or South Coasts of the United Kingdom.

Labor troubles all over Europe necessitated a clear definition as to the risk of underwriters for damage caused by strikers and this culminated in the "strikes" clause which is now embodied in the Institute cargo clauses, to which reference has already been made.

War between Italy and Turkey and, later in the year, the outbreak of hostilities between the Allies and Turkey caused trouble in the Dardanelles and cargo bound to or from the Black Sea had to be specially covered against "war risk." Early in the year claims were made on underwriters for damage consequent on delay or detention. To protect themselves from claims of this character subsequent insurances were based on an acceptance of the risks mentioned in the F. C. & S. clause, but excluding claims under general average resulting from damage or loss consequent on delay or detention. A very large amount of business was done on this basis and rates varied between 11/2 and 1/4 per cent, according to the actual conditions ruling at the time the insurance was effected. state of war in Europe naturally had a reflex action in view of the possibility of other powers being dragged into conflict. This uncertainty was revealed in the necessity for insuring cargoes against "war risk" on various voyages. The general rate asked was 1/8 per cent but ships from the West Coast of South America, for example, paid 14 per cent. When the amount of business done in this way is considered, it will be found that underwriters have benefited very considerably. In many cases the additional premium amounted to an increase of 30 per cent on the marine premium which all goes to the benefit of the year's account.

WRECKS, CASUALTIES AND MISCELLANEOUS REPORTS

Westerner," Str. From Astoria Jan. 9th for San Francisco, lost part of her deckload when crossing the bar and was obliged to return to restow cargo. No damage to vessel is reported.

"Gifford," Br. Str. From Eureka for Nanaimo and Vancouver, went ashore on Jan. 9th below the Fraser River. She was floated on the 13th and was apparently undamaged.

"Sonoma," Str. From Sydney Jan. 11th for San Francisco. struck some submerged wreckage and the starboard tailshaft was broken. She continued and completed the voy-



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age under the port engines and will go into dry dock for repairs.

"A. M. Simpson," Str. From Coos Bay for San Pedro, while making a landing broke her tailshaft and lost her propeller.

"Cordova," Str. From Valdez for Seattle, went ashore in Wrangel Narrows on Jan. 13th and remained 48 hours. After lightering some cargo she was floated and proceeded to Seattle, where she was placed in dry dock. Estimated cost of repairs \$2,500. Steamer insured locally and abroad.

"La Touche," Str. From Seattle for Valdez, went ashore on a rocky bottom in Icy Straits on Jan. 19th, but was subsequently floated and proceded to Cordova. Vessel is badly strained and No. 3 tank leaking. Partial cargo to serve as ballast was loaded and the steamer proceeded for Seattle.

"Oscar," Sound Str. Carrying explosives to the mines at Nanaimo caught fire and the powder exploded, causing injury to many of the crew. The steamer was beached on Protection Island. Damage not ascertained.

"Poleric," Br. Str. From Yokohama for Seattle, arriving Jan. 22nd, had a fire in the bunkers which was not extinguished after considerable trouble. Some damage was done to ship and cargo in the efforts to extinguish the fire.

"Seward," Str. From San Francisco Jan. 5th for Panama, lost part of her rudder but was able to make the port of Mazatlan under her own steam. A tugboat has been sent to tow her to San Pedro, where a new rudder, being made in Seattle, will be installed. It is expected that it will not be necessary to discharge the cargo but to put the rudder in place by tipping her. She is due in San Pedro about Feb. 15th.

"W. S. Porter," Tank Str. On Jan. 23, while on passage from Monterey for Portland lost part of her rudder and was picked up by the Str. "J. A. Chanslor" and towed to San Francisco, where a new rudder will be installed. Steamer valued at about \$300,000 and insured locally and abroad.

"Mackinaw," Str. From Balboa Jan. 11th for San Francisco via San Pedro, struck the jetty after leaving San Pedro but was subsequently floated and taken back to San Pedro harbor. Damage extensive and the steamer is now in dock at San Pedro, where repairs are being made. Cargo will be reloaded and voyage resumed as soon as repairs are completed.

"Advance," Schr. From Bandon Jan. 26th, struck on the bar while proceeding out for San Francisco and started her sternpost. Temporary repairs were made at Bandon and the vessel proceeded for San Francisco.

"Santa Maria," Tank Str. From Port San Luis for Seattle, went ashore on Whidby Island on Jan. 28th. She was floated after lightering part of her cargo of oil and proceded. Surveyors reported that she had sustained little or no damage.

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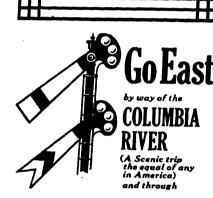
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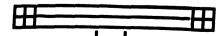
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ORIENTAL BERTH

The condition affecting regular berth tonnage in Oriental trade remains unchanged. All outbound steamers sail with capacity cargoes, and such space as operators hold commands high rates. Owing to recent advance in wheat, the inquiry for flour has fallen off somewhat, but this is considered to be only of a temporary nature. It is estimated that several thousand tons of fish will have to be held over until next year, on account of lack of space in steamers that can reach the Orient in time to save market.

Since our last issue, the Royal Mail Steam Packet Company and the Hamburg-American Line have both definitely announced their entrance into the Transpacific trade, through extensions of their respective services from Europe to the Orient. The Hamburg-American Line steamer "Sithonia" left Hamburg on February 5th for Vancouver, Seattle and Portland, via Suez and Oriental ports, and is expected to reach this Coast early in May. She will load return cargo for the Orient and Europe at ports already named. She will be the first through steamer of the Hamburg-American Line, and will inaugurate regular monthly sailings. This line will be represented in Seattle by Mr. Dudley Burchard, at present handling the affairs of the Kosmos Line.

The Royal Mail service will start from London on the 9th of May, with the sailing of the "Monmouthshire," and will be followed by similar steamers every thirty days. Their initial sailing from this Coast, in the Oriental service, will be the "Harpagus," from Seattle, on April 25th,

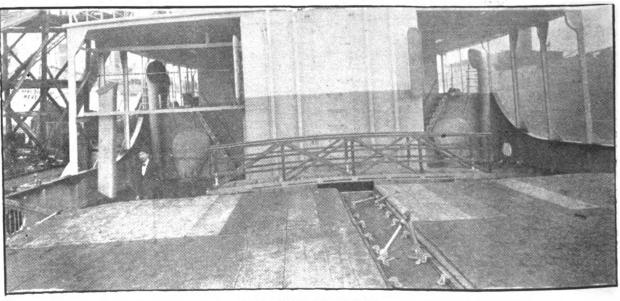
for Japan, China and the Philippines. The Northwest representation of this great steamship firm has been placed with the Frank Waterhouse Company, and it is rumored that, in addition to the Oriental service, the Royal Mail Company will have fast passenger and freight services to Europe, as well as a coast to coast service from Eastern Canadian points, immediately after the Panama Canal is open to commercial steamers.

Did you read the 44 pages of the January issue of the PACIFIC MARINE REVIEW?

Read the 48 Pages of the February number and WATCH FOR MARCH.

Mr. Dave Fleming, representative of the Bowers Rubber Works at San Francisco, is now in Seattle and will remain here for a few days.

The Bowers Rubber Works manufacture the Great Cross Expansion Skookum Packing, for which the Puget Sound Machinery Depot are agents, and Mr. Fleming, who travels all over the United States for this firm, is well known by marine engineers as well as dealers in engine room supplies.



S. S. "ADELINE SMITH"
Showing Hatches and Top of the Hough Central Longitudinal Girder Tank

The steamer "Adeline Smith," built by the Newport News Shipbuilding Company for the C. A. Smith Lumber Company of Marshfield, Ore., is due at San Francisco from her builders about February 12th.

Latest advices indicate that she is making a record trip from Newport News to this coast.

The principal dimensions are as follows:

Length overall	210'-6"
Beam moulded at deck	44'-6"
Beam at bilge	43'-0"
Depth moulded	21'-6"

Engines, 21"-35"-60"x42". Steam, 200 lbs. There are four "B. & W" watertube boilers, three of which will run the engines at full power, the fourth being a spare.

The model is unusually fine for this class of steamer and the vessel throughout is extra heavily plated.

She is divided into eleven watertight compartments which include the holds. There are eight holds designed to accommodate standard lengths of C. A. Smith lumber. Any four of these holds can be flooded without danger to the ship.

The 'Adeline Smith' is provided with a salt water ballast system which will be used going north. The amount of water carried gives the vessel a draft of 16 feet aft and 14 feet forward.

On the trial trip the steamer made a speed of 13½ knots in water ballast trim.

10

THE NECESSITY FOR REGULAR REVENUE FROM SEATTLE PORT DISTRICTS

The Seattle Port Districts which are created under the statutes of the state of Washington have been given wide powers and are thus charged with responsible duties involving the expenditure of large sums of money. Three general sources of revenue have been authorized-direct taxation within a fixed limit; bonded indebtedness within a fixed limit, and revenues from leases or direct operation of wharves, docks, etc. The tax budget must be for purposes specified in advance, and cannot be departed from. Bond issues are absolutely limited to the specific purpose for which authorized. Wharf receipts, etc., are all required to pay interest and amortization charges on bonds until they mature. Under the present conditions, therefore, and for more than a generation to come, port districts in this state will be without revenues which will enable them to meet emergency work or any expenditure not specifically authorized a year or more in advance. The system is thus deprived of all elasticity. The prompt removal of shoals from channels, the prompt repair of unforeseen accidents to wharves, etc., and efficient attention to the multitude of details which cannot be anticipated. will be quite impossible under the present system. This condition is a severe handicap and calls for consideration by the state legislature.

Conditions are very different in our sister state and commercial rival, California. For example, the board of Harbor commissioners of San Francisco, through its toll charges, and particularly its leases of "seawall lots" (equivalent to our tide flats) enjoys an immense revenue, amounting for the year 1911 to \$1,637,949.19, of which \$900,822.58 was for ground rents. This gives the port so great a degree of independence that it has never levied a cent of direct taxation nor received above \$3,500,000 aid in bonds until the recent bond issue of \$9,000,000 (still nearly all unsold) designed to place the port in readiness for the Panama Exposition.

Other ports of California, though yet lacking a developed revenue system like that of San Francisco, still enjoy a great advantage in this respect over ports of Puget Sound. In 1911 the state legislature ceded to the cities of Oakland, Los Angeles and San Diego the waterfront and tidelands within their respective limits. The tracts so transferred comprise 3,737 acres in Oakland, 1,204 acres in Los Angeles and 1,460 acres in San Diego. All of these areas are as favorably situated for development as is Harbor Island in our own city, which comprises less than 300 acres. The advantage which these California cities will enjoy over our own port, as they bring these lands into productive use, can be partially appreciated by supposing that the Port of Seattle were owner in fee simple (by gift of the state) of the whole of Harbor Island and the tide flats between East Waterway and First Avenue and of large tracts at Smith's Cove and Salmon Bay. Each of these cities will soon be in a position like that which San Francisco has enjoyed so long, of complete independence from taxation and bond issues except for the financing of unusual projects. In other words, each port will be selfsustaining, whereas Seattle, under present conditions, must, for an indefinite period, levy an annual tax budget to carry on even its routine work.

It is impossible to overestimate the importance of an independent resource like those of the California ports in promoting the efficiency and effectiveness of a port organization, and while there is no possibility of any such gift from the State of Washington as those which these ports have enjoyed from the State of California, something nevertheless can be done along the lines suggested below:

(1) A portion (not less than 75 per cent) of the rental

for harbor areas should be applied to the development of the ports from which collected.

- (2) The occupancy of portions of state waterways by private interests should be subject to a reasonable rental, and a portion (not less than 75 per cent) of such rental should be applied to the development of ports from which collected. In certain of the state waterways space is now occupied by private interests, wholly without authority, and absolutely rent and tax free, where land adjoining is worth a dollar to a dollar and a half a square foot. It is an anomalous condition which should never have been allowed to develop, and which should be remedied without delay. Authority should be given to local port commissions to supervise the granting of permits for such occupancy of waterways and the determination of a reasonable rental therefor. It is not intended to interfere with a proper use of these areas by private interests, but simply to place such use upon a legally authorized basis.
- (3) There are certain waterways or portions thereof which are not of any use for navigation and in which such use may not develop for a long time to come. The north half of the Smith's Cove waterway and the old Canal Waterway in the city of Seattle are examples. While it might be premature, and would possibly conflict with the constitution to abandon these waterways outright, and would certainly involve complications in disposing of the lands. there ought to be no objection to a temporary use for other purposes, and it is recommended that the legislature confer upon local port commissions the necessary authority to utilize such waterways or portions thereof for the time being for purposes other than those originally intended. Of the revenue derivable from such use, a portion (not less than 75 per cent) should be applied to the development of the ports from which collected.

In recommending the authorization of the foregoing sources of revenue, it is recognized that the long-standing custom in this state has been to pay such revenue as has actually been collected into the state treasury. But it does not seem right, where there is such a crying need for aid in developing the properties from which it is derived, that it should all be so disposed of. Moreover, it is reasonably certain that the plan herein proposed of applying a portion directly to port development will result in yielding a greater aggregate revenue to the state than it will derive from the existing system. This is because of the new sources of revenue proposed, the closer attention which port commissions will give to these matters, and the more rapid development which will be stimulated thereby.

The Port Commission has proposed four bills embodying the foregoing suggestions. One of these bills relates to the question of leases of harbor areas. That there may be no misapprehension in regard to this measure, it may be definitely stated that it does not contemplate any interference with existing lawful leases, but contemplates that they shall run their full course. It simply provides that the granting of new leases shall hereafter be under the supervision of the Port Commission.

At the seventy-second ordinary general meeting of the Peninsular & Oriental Steam Navigation Company, held recently, the directors, after providing for the usual dividend at the rate of 5 per cent per annum on the preferred stock, recommended a dividend on the deferred stock of 6½ per cent for the six months, together with a bonus at the rate of 5 per cent, making, with the interim dividend of 3½ per cent paid in May, a total distribution on the deferred stock of 15 per cent for the year.



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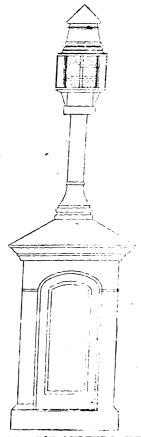
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716 Second Ave. Seattle, Wash.

LIGHTING CULEBRA CUT

Channel Will Be Dark Except for a Few Beacons

Ships sailing through Culebra Cut at night will be guided by a system of beacons on either bank, but except for these lights, or such light as is lent by the moon and stars, the journey through the cut will be in the dark. From the top deck of the largest ship no glimpse may be obtained of the country along this part of the canal, for even the broad swale opposite Culebra will be high above the deck, while at the summit of the continental divide, where Gold and Contractors' Hills have been cut away to make the channel, the rock sides will tower hundreds of feet above the mastheads. This close confinement of the canal between the hills will make for intense darkness, and at times there will be heavy fogs such as now accumulate in the cut during the night, and are dissipated by the sun in the morning.

In the original project for lighting the canal it was explained that the conditions in Culebra Cut would make impracticable the system of range lights employed on the lake and in the sea level channels. In this system two



BEACON FOR CULEBRA CUT

Beinforced Concrete, Occulting Light, Base to Pocal Plane 15

Peet. Width of base 4½ Peet.

lights are placed one behind the other on the bank, in such relation that when the pilot gets them both in line he knows that his ship is on the right range. But the steep sides of Culebra Cut do not permit such an arrangement, because there is not room for one light to be placed behind another at sufficient distance to make them of any use as range indicators. The plan therefore is to establish three beacons at each angle in the cut, and between there, intermediate beacons in pairs on each side of the canal. By keeping his ship pointed midway between these beacons, the mariner will be able to adhere closely to the center of the canal.

Steering a ship through Culebra Cut will be much like the navigation encountered in the tidal estuaries of the southern rivers where there are many turns. For the canal does not follow a straight line through the continental divide but takes advantage of natural depressions in the land, in order that excavation may be reduced to the minimum. In all there are eight turns or angles, the sums of which represent 144½ degrees of curvature, so that if all the turns were made at one time and in one direction, a ship in passing through the cut would describe over one-third of the arc of a circle.

Entering the cut from the Atlantic side and going southward, the first angle occurs at Bas Obispo, where the canal turns 30 degrees to the right. The course lies straight ahead for 9,915 feet to Las Cascades, where there is another turn to the right of 9d 9m 26s. From this point the next turn, which is at Cunette near Empire, is a distance of 6,219 feet, and there the canal turns to the left 29d 25m 53s. Beyond this at a distance of 2,027 feet is another turn to the left of 7d 36m 13s at Empire. Four thousand five hundred thirty-three feet beyond Empire there is a turn to the right of 22d 14m. Then comes a straightaway of 7.891 feet to Contractors' Hill, and there the line turns 17d 43m to the left, and there is another straight stretch of 6,467 feet to a point near Paraiso, where there is another angle of 12d 7m 30s to the left. Between this point and the forebay of the locks at Pedro Miguel is a distance of 3,663 feet and there the line turns again to the right 16d 15m 35s.

Throughout the entire length of the cut, with the exception of only two turns or angles, the pilot will have before him only the lights necessary to guide the ship through the tangent in which it happens to be, and will see no other aids to navigation until he reaches the next turning point. This is accomplished by screening the lights so that they will be seen only through a certain number of degrees of arc of the horizon.

To eliminate the possibility of confounding the lights with one another and with lights ashore, all the beacons will have individual characteristics formed by flashes of light and dark intervals. Thus the tentative arrangement for all turning point lights on the starboard hand is a single flash whose period of flashing is three seconds; for all turning point lights on the port hand, a double flash whose period is three seconds; for all intermediate lights marking the starboard edge of the channel an occulting light whose period of occulting is ten seconds; and for all lights marking the port edge of the channel, a double flash whose period of flashing is 8.8 seconds.

There will be 35 reinforced concrete beacons in the nine miles of Culebra Cut, 23 at tangents, and 12 at intermediate points. These have been cast at the Balboa plant of the lighthouse subdivision, in three parts—the body, the roof and the part for the lantern, and are ready to be installed as soon as the work in the cut has advanced far enough. At present the slides make it impracticable to place the foundations for the beacons. It is proposed to make the foundations on the 95-foot berms, after the cut is flooded, to carry the beacons in barges to the points where they are to be set up and there to lift them from the derrick barge into position.

Contracts for the construction of torpedo boat destroyers Nos. 51, 52 and 53 were awarded to the William Cramp & Sons Ship and Engine Building Company, Philadelphia, Pa., for \$842,000 each; No. 54, to the Bath Iron Works, Bath, Me., for \$810,000; No. 55, to the Fore River Shipbuilding Company, Quincy, Mass., for \$854,500, and No. 56, 'o the New York Shipbuilding Company, Camden, N. J., for \$873,500.



WORK AT THE PACIFIC ENTRANCE OF THE PANAMA CANAL

Fortification and breakwater, dredging, and the construction of terminal wharves are in progress at the Pacific entrance to the Panama Canal. Ships from all ports of the west coast of the Americas lie in the present docks unloading or taking on cargo. The lie of the land north of the Gulf of Panama is such that ships on entering the roadstead must sail northward, no matter from what direction they come, and therefore every vessel that comes into the Pacific entrance passes in full sight of most of the work

The mainland has been connected with Naos Island by the breakwater, the gap of 17,000 feet having been closed after many setbacks occasioned by the rock and earth slipping upon the silt bottom, and settling into the mud. Dumping of soil from Culebra Cut continues, because the breakwater, although stable for its whole length, is not yet completed to its full width. Already, however, the currents that set from the west have been stopped, and the uncompleted mole is serving its purpose of minimizing silting in the canal channel.

All the new cranes for the old steel pier are in position, and the new concrete wharf, the first of the new terminal quays to be constructed, has been diverted from its original service as a lumber unloading wharf, covered throughout, and is used for general cargo. Beyond it, towards the north, work is being pushed on the remainder of the terminal quay to be built at this time.

Little remains of the old village of Balboa. Steam shovels working on the site of part of it have dug out a location for the railway tracks and highway that will run along the east side of the dry dock between the dock and Sosa Hill. In the marine shops two steel barges used in the Atlantic entrance, and brought around South America to Balboa, are being converted into bottom dump barges for use in towing spoil from the dredges out to sea.

The dredging fleet is stretched along a distance of 21/2 miles, from the end of the steel pier to the dike that separates the entrance work from that at Miraflores Locks. The old French ladder dredge "Mole," in charge of the master who has been dredging in the Pacific entrance for 25 years, is scraping hard rock from the bottom of the canal, 45 feet below mean tide. This dredge can work only between mean and low tide, because its ladder will not reach a greater depth than 45 feet. All the rock is removes must first be broken by blasting, and nearby the drill barge "Teredo" is at work making holes in the rock bottom for the charges of dynamite.

The rock breaker "Vulcan" does its work by raising a 20-ton steel ram to a height of ten feet or more and letting it drop upon the rock. This hammering is repeated upon one spot until the ram reaches the desired depth of 45 feet below mean tide. Then the "Vulcan" is moved over an-

other spot where its work is continued. A plan in the master's office on board shows the area covered from hour to hour. The rock is broken at intervals of 3 feet, and an area covered in this way needs no further attention.

The dipper dredge "Cardenas" is at work in the channel opposite the new concrete wharf, about 5 miles inland from the entrance. It is digging rock and earth at a depth of 45 feet below mean tide. This dredge was purchased when the canal plan called for locks at Balboa, and no deep water excavation in rock was anticipated. It is therefore too light for effective work at such a great depth, and its output is not good, although sufficient to justify its retention in the service.

Four miles up the channel the old French dredge "Badger" is scraping rock and mud off the bottom of the canal, the material having been previously blasted by dynamite. It works under the same handicaps as the "Mole," not having been designed to dig at a greater depth than 30 feet below mean tide.

At the end of the channel, with its nose touching the dike that separates the entrance work from that at Miraflores Locks, the new ladder dredge "Corozal" is digging rock and earth that have not been blasted. It is working to a depth of 45 feet below mean tide, and compared with the remodeled French dredges, gives a good illustration of the greater effectiveness of modern excavating machines. It has been at work since last April in various parts of the channel. Its string of 52 buckets of 35 cubic feet capacity each has required no renewal, but all of them show the effects of hard service. It works in unblasted material, and digs out both rock and earth without ceasing although some of the rock ledges struck at the greatest depth make the engines work slowly, while the ship quivers with the effort. The lips of the buckets are of manganese steel, and yet these have been broken and worn by the hard material encountered here and there. Digging is carried on at all stages of the tide, 24 hours a day, six days a week. The output in heavy clay and blue sandstone, interspersed with ledges of hard rock, is about 150,000 cubic yards a month. This is the dredge that will complete the digging in Culebra Cut if the steam shovels now at work there do not finish it before the water is turned into the trench.

The seagoing suction dredge "Culebra" is also at work in the channel, cleaning mud from the rock at the bottom of the canal. The pipeline suction dredge recently brought from Gatun Dam and re-erected at Balboa, is pumping mud from the site of the new terminal docks and depositing it on the flats nearby.

The total amount so far expended on the construction of the Panama Canal as given in a statement under date of October 31st, 1912, is \$272,310,940.15.

SHIPPER NOT LIABLE FOR INLAND FREIGHT

Decision Rendered in Favor of Mitsui & Company

HE United States Circuit Court of Appeals for the Ninth Circuit, sitting in San Francisco, recently rendered a decision in favor of Mitsui & Co. and against the St. Paul Fire & Marine Insurance Company in a case involving the question of ultimate liability for inland freight charges on 1,200 bales of cotton snipped upon through bills of lading from Oklahoma via Seattle to Kobe, Japan. We are publishing this case as it appeared in the Commercial News of San Francisco.

The cotton shipment reached Scattle safely, and was there loaded on the Great Northern steamship "Dakota," which was wrecked while proceeding to Tokio, Japan, in the fall of 1906 and, with her cargo, was a total loss. The inland charges for railroad freight on the cotton from Oklahoma to Seattle had been paid by the Great Northern Steamship Company upon the delivery of the goods to them at Seattle in pursuance of a clause in the bill of lading reading as follows:

This contract is executed and accomplished and all liability hereunder terminates upon the delivery of the said property to the steamship, her master, agent or servants, or to the steamship company, or on the steamship pier at the said port, and the inland freight charges shall be a first lien due and payable by the steamship company."



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This clause appeared under the heading, "Conditions to Seattle," and followed the provision in the main part of the bill of lading to the effect that freight for the whole voyage was payable upon delivery at destination in Japan. Upon paying these advance charges, the steamship company insured them under a policy issued by the San Francisco office of the St. Paul Fire & Marine Insurance Company. After the loss the insurance company reimbursed the steamship company, and upon an assignment from the latter brought action against Mitsui & Co., one of the original shippers, upon the theory that as part of the entire transportation had been performed, they were entitled to freight for such portion of the trip in accordance with the terms of the bill of lading clause quoted.

This view was sustained by the United States District Court in San Francisco, and judgment was entered against Mitsui & Co. for \$5,249.43, whereupon actions against other shippers were instituted by the insurance company in various parts of the United States. This decision has just been reversed.

This is a case where various shippers in the interior of the southern states shipped cotton on a bill of lading which named a through rate from the interior states to points in Japan. This bill of lading, while appearing on its face to be a through bill of lading, referred specifically to two parts which should constitute the contract. Those two parts were set out on the back, each one separately, one covering the railway haul from the initial point to Tacoma or Seattle, upon the arrival at which place it was agreed that the connecting carrier (the steamship company), was to pay the railway company's freight. The other part provided for carriage by either of several lines of steamers to Japan.

The cotton was carried to Seattle, and the steamer "Dakota" advanced the railway freights, took the cotton on board and proceeded to Japan, where she was lost just before arriving at the first port of call. The cotton was abandoned to the underwriters, who saved what they could and had the same sold, and later on, the proceeds were distributed among the various underwriters on the different lots of cotton, but not until the St. Paul company had filed notice of a lien against the proceeds, claiming same under the terms of the bill of lading.

The St. Paul company had insured the steamer "Dakota," covering her own freights and covering also the advances which she had made upon the cotton, and paid a total loss thereunder, upon the loss of the vessel.

The St. Paul company then brought a suit against Mitsui & Co., as a test case, to compel them to repay it the advances made by the "Dakota" for which the St. Paul company paid, and which advances were claimed to be made under a contract that Mitsui & Co. would repay. Judge Van Fleet, sitting in the Circuit Court, decided in favor of the St. Paul company. Mitsui appealed. The Court of Appeals, consisting of Circuit Judges Gilbert and Ross and District Judge Wolverton, considered the matter, and two opinions are now delivered, the majority opinion being signed by Judges Gilbert and Wolverton, who decide:

"We conclude, therefore, that the shippers were not bound to the payment of inland freight when the cotton in transit was delivered to the steamship company at Seattle for further carriage to the Orient, nor did the shippers become bound to the payment of such freight to the steamship company upon its payment to the railway lines, although such company acquired a lien on the property for such freight paid. The property being lost, however, the lien was also lost, and the steamship company was without right of action against the shippers for the freight charges. The insurance company, the defendant in error, is in no better position than the steamship company; hence was not entitled to recover. Besides, the British & Foreign

Marine Insurance Co. vs. Southern Pacific Co., Supra, the case of Scow No. 190, etc., 88 Fed. 320, supports this conclusion, and is instructive.

"The judgment of the Circuit Court will be reversed and remanded, with directions to dismiss the action."

Circuit Judge Ross delivers an opinion, which says in part:

"I am unable to agree to the judgment in this case. As I read the bills of lading under which the cotton was shipped, they were several, and not joint, contracts. The whole frame of the instruments, in my opinion, shows this to be true; but as if to make assurance doubly sure, the respective carriers by their agents expressly recited in the bills of lading, agreed to and accepted by the shipper, that they were severally, and not jointly" executed. Further:

"Paragraph 12, "This contract is executed and accomplished and all liability terminates on the delivery of the said property to the steamship, her master, agent, or servants, or to the steamship company, or on the steamship pier at the said port, and the inland freight charges shall be a first lien, due and payable by the steamship company." Upon such delivery the railroad companies became entitled to the inland freight, and for its payment the steamship company became liable by virtue of its express contract contained in the clause just quoted, and for which the shipper was manifestly liable in the event the steamship company did not pay, for the debit was the debt of the ship, but the steamship company did pay the inland freight, and that of course ended the shipper's liability therefor and gave the steamship company the right of recovery against the shipper for such advance; to which right the appellee insurance company is justly entitled to be subrogated. In my opinion, the judgment should be affirmed."

It will thus be seen that each of the three judges in the Court of Appeals are of the opinion that the inland freight became a proper lien upon the goods, and hence being a lien on the goods, remained a lien upon the proceeds, and it so happens that in this case the proceeds amounted to more than three times (some \$58,000), the amount of the railway advances in question (some \$19,000), and it becomes apparent that the judgment of the court will not affect the ultimate result of giving the St. Paul company the money for which it sued, and that possibly because of this new angle in the decision, the principle as to whether the shipper would really be obligated to pay, may not have to be decided by the Supreme Court.

The suit at bar did not involve the question as to whether the St. Paul company had a proper lien on the proceeds, and decision on this especial point is obiter dictum. It is understood, however, that the St. Paul company had foreseen the possibility of this and had placed such restrictions upon the delivery of the proceeds to the various insurance companies as to practically assure it of ultimate collection in case the proceeds amounted to enough. When the suit was begun, however, it was not known as to what amount of the proceeds in fact applied to each particular lot of cotton against which the charges were advanced, and therefore the court rather assumed, having no evidence on the point, that the goods were lost.

Shipments From San Francisco-Month of December	, 1912
Flour, lbs.	35,984
Wheat, ctls.	
Barley, ctls,5	47,462
Oats, ctls.	
Beans, ctls.	18,099

Shipping Record, Port of Tacoma

Tons	Dec., 1912	Dec., 1911
Outward registered tonnage		207,728
Inward cargo tonnage		67,231
Outward cargo tonnage	89,490	72,240



The INTERNATIONAL MERCANTILE MARINE CO., consisting of the American Line, Atlantic Transport Line, White Star-Dominion Line, Leyland Line, Red Star Line and the White Star Line, has moved into very desirable new quarters at 619 Second avenue, Bailey Building, Seattle.

This company has greatly increased its business during the past year and has a very bright outlook for 1913. Under arrangements recently made those on the Pacific Coast planning a European trip do not have to wait until they reach New York to arrange for their accommodations, as they formerly did, but can secure them through the North Pacific Coast Passenger Agent, Mr. A. E. Disney, Seattle representative of the INTERNATIONAL MERCANTILE MARINE CO.

COMMERCIAL MOVEMENTS AT PORTLAND, OREGON Lumber Exports From Portland (Foreign)

Feet	Value	Feet	Value
8,355,431	\$ 98,946	11,007,073	\$106,294
	(Domes		
17.056,520	183,358	9,755,000	97,550
Whea	t Exports From	Portland (Forei	gn)
Bushels	Value \$1,326,056	Bushels	Value
1.532,429	\$1,326,056	857,086	\$727,673
77.	(Dome 382,549	stic)	
444.825	382,549	1g9,833	135,838
Flou	r Exports From	Portland (Foreig	(n)
Barrels	Value , \$ 111,664	Barrels	Value
31,324	\$ 111,664	56,521	\$223,459
	(Dome	estic)	
31,800	141,510	33,684	116,212
Barl	ey Exports From Value	Portland (Forei	gn)
Bushels	Value	Bushels	Value
276,433	\$ 192,200		
	\$ 192,200 (Dome	estic)	
52,541	31,525		
	Tonnage Enter	ed at Portland	
January, 191	271 v	essels	.108,552 tons
January, 191	382 v	essels	.112,290 tons
	Tonnage Cleared	d From Portland	
January, 191	384 V	essels	121,766 tons
January, 191	268 v	essels	107,794 tons

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The installation of electrical conductors and fittings on board ships for furnishing electric power and light is as distinctive a branch of the electrical industry as the building of ships is distinct from the building of houses. During the last few years, many thousands of dollars have been expended in the manufacturing and development of electrical fittings for the sole purpose of reducing fire hazards and this has been carried to such an extent that fire losses due to electrical causes have been reduced to the minimum.

Safety from fire is as important on ships as on land but the conditions which render an electrical installation unsafe on ships are so entirely different that different fittings

and construction are necessary in order that the installation should be safe from fire, permanent and reliable.

If a ship were wired with the same fittings and material and the same practices used as are ordinarily used in a first class building installation, it would make a very unsafe and unreliable plant, sure to give trouble in a very short time from open circuits, shorts and grounds.

Salt water is a conductor of electricity-fresh water is not. If a little water should come in contact with the wire or fittings in the wiring of a house, little or no damage would accrue, the water would not conduct the current from one wire to another causing damage and as soon as the water was removed or evaporated, the wiring in the fixture would be as good as ever. The probabilities of water coming in contact with wiring in a building are so remote and the damage would be so slight in such an event that little or no precaution is used to make the job water-tight. If salt water comes in contact with wires or fittings carrying electric current, the conditions are very different, and this fairly good conductor would cause the current to flow from one wire to the other and if not of sufficient quantity to blow the fuse protecting the wire, an electroletic action would be set up, which would very shortly destroy the wires and thus render them useless, causing lights to go out with all the inconveniences and dangers that would of necessity follow. If the salt water should be removed and dried up very shortly, the damage would not be removed. The salt that was in the water remains in the insulation of the wires. Salt has the property of attracting the moisture in the air to itself, thus keeping the insulation always damp, making it dangerous from a safety standpoint.

The study of durable and reliable electrical installation on ships is a subject which naturally attracts the attention of all electrical contracting firms for marine installations and Messrs. Buxbaum and Cooley of Seattle have gained a reputation in the Pacific Northwest as an absolutely reliable and experienced firm in this class of work.

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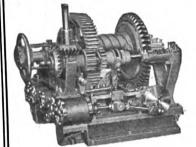
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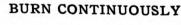
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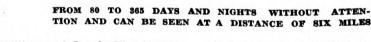
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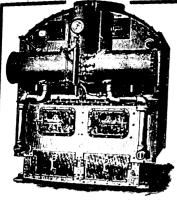
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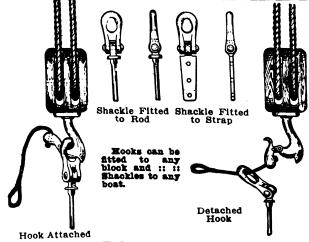
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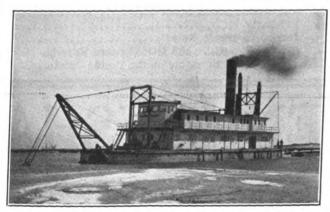
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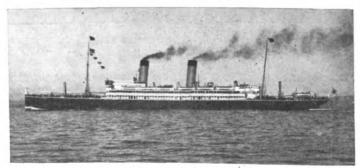
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VOL. X.

SEATTLE, WASH., MARCH. 1913.

No. 3.

OUR OBLIGATIONS TO THE WORLD IN THE PANAMA CANAL TOLL ISSUE

entropy of the control of the contro

S previously indicated in articles of the Pacific Marine Review, both on Panama Canal Toll Questions as well as on Preferential Duty as an Aid to American shipping, one may feel doubly assured that the many patriotic members of marked influence favoring such propaganda in the incoming sixty-third Congress, soon to be called in special session, will introduce bills for the accomplishment of the purpose so much desired. The Democratic party in both Houses will prove doubly active, favored as they are by a progressive President who will unquestionably treat these vital subjects exhaustively in his message to Congress, which is eagerly looked forward to by all interested in the maritime affairs of our country.

It will be the aim of the incoming administration to have every measure favoring our American Merchant Marine. which are measures based on this party's fundamental "Equal rights to all and special privileges to principles: none" enacted into law.

There is aside from the adjustment of the tariff and the enactment of a satisfactory currency law no subject of more vital and greater importance to the nation at large than the future commercial well being of the United States of America, resting with an unbiased Panama Canal toll issue and the just and rapid upbuilding of our Merchant Marine on the seven seas.

Mr. John Latta, of the firm of Lawther-Latta & Company, London, England, has on previous occasions favored the Pacific Marine Review with discussions on Panama Canal toll questions, at that time principally relating to the shelter deck type of vessel, which indeed is recognized as the safest ship and if dues are charged on the measurement basis, this type of vessel is placed at a decided disadvantage. However, in the following ably written article, Mr. Latta includes the expression of his opinion on the dispute over the Hay-Paunceforte Treaty in a fair and remarkably broad-minded manner and which does not in any sense stigmatize the American people in their desire to aid their own Merchant Marine if only in the coastwise trade. However, arguments pro and con the Hay-Paunceforte Treaty have practically been exhausted and after all this matter was recommended by ex-President Taft to be arbitrated at the Hague Tribunal.-Ed. Note.

Mr. Latta writes:

HERE are only two important points upon which I hold views sufficiently decided to venture to give an opinion. That is to say, to one such as yourself, who is now regarded as an undoubted authority on this question.

In regard to the dispute over the Hay-Paunceforte Treaty, I have looked on the voluminous writings and longer discussions, as mere natural stepping stones that had in the nature of things to be gone over before the real issue could be adjusted. The terms of the treaty are clear and incapable of misconstruction to all sound thinking Americans, who are as scrupulously exacting in carrying out their agreements as is any nation in the world. When the treaty was engrossed and signed, it was, so to speak, forgotten by every other nation except the United States, who from then were up against one of the biggest problems the world has ever had to fulfil. The greatest French engineer had failed to cut the ditch. The immensity of the project expanded in the minds of Americans, as graphic details of the work, and of unexpected difficulties, year

in and year out, were constantly kept before them. One has therefore to consider the influence of such environment, and the effect of what appeared to be great self denial by the American nation. Under such circumstances, if for a moment a certain section regarded the bargain from the American side as too onerous, it is partly excusable. In any case, it is not surprising that a new condition of things presented itself to the minds of many Americans, which they thought justified argument. present position is what might naturally have been expected, and does not in any sense represent a stigma on the American people. They appear to be at the stage now where having exhausted all arguments, and having heard both sides, are prepared to act squarely, good, had or indifferent as the agreement, from the American side, may have to be regarded. That at worst it would be submitted to the Hague for arbitration I never doubted, but shall be disappointed if even arbitration is ever adverted to, as I think the American people will continue to swing round, and that an adjustment will be reached without the matter being submitted to any outside arbitrament.

The other point on which I hold strong views, is one I mentioned to you on a previous occasion, and refers to the principle upon which dues shall be exacted. So far as I can learn, it is still the intention to follow the system of the Suez Canal. It is a method in every respect contrary to direct American practice. To charge dues on register measurement is a fundamental mistake of the worst type. It would just be as reasonable to base the charge on the girth round the stomach of a spectator desiring to view a baseball match. The charge is made in accordance with the value of the show he expects to see. The charge for ships passing through the canal should be based on the commercial service the canal renders to the shipowner. There ought to be two principles, one chargeable on the total deadweight of the steamer, and when carrying deadweight, dues should be exacted on deadweight tonnage. The other should be chargeable on the total internal measurement capacity, and when measurement cargo is being carried, dues exacted on measurement tonnage. principle admits of shipowners constructing ships best adapted to the nature of the cargo, and to the development of the trades which the use of the canal best serves, and does not commit it to the responsibility of influencing the construction of ships, by way of making it to the advantage of shipowners to build what may not be the most seaworthy ship, but the ship that most judiciously jinks the measurement rules. The safest ship built is the shelter deck ship, and if charged dues on the measurement basis, is placed at a great disadvantage. She will be much in the position of the baseball spectator, who pays to enter a field where two matches are to be held, one succeeding the other. The charge at the gate is made double, but would be very unfair where it is only desired to witness one match. In point of fact, the large measurement ship is worse off by comparison, inasmuch as when she is loaded down to her Plimsoll mark, she cannot utilize the available remaining space in any form to earn freight, while the spectator referred to can, if he so desires, wait and see the second match. I am satisfied that the canal authorities will make an irreparable mistake if their charges are based on the register measurement."

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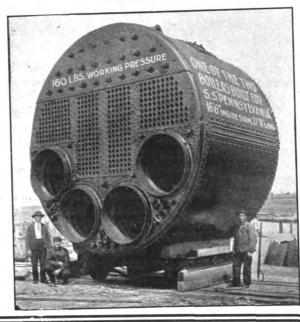
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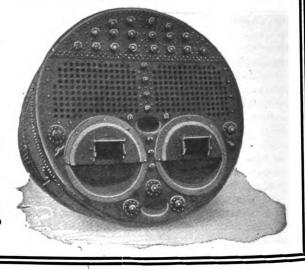
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MR. F. S. SAMUELS AND CAPT. ROBT. DOLLAR ON THE TOLL QUESTION

The views of Mr. F. S. Samuels, chief executive of the Oceanic Steamship Company of San Francisco, are particularly interesting. Mr. Samuels proposes a remedy for the successful operation of American steamers in the foreign trade which is not only feasible and unique but highly commendable as a solution of the eminent and difficult problem now confronting us as to how vessels can profitably be operated under the American flag in the off-shore trade, in competition with foreign nations with the opening of the Panama Canal.-Ed. Note.

Mr. Samuels' proposed remedy is as follows:

MEND the Panama Canal Act so as to compel vessels in domestic coastwise commerce to pay tolls. Place the amount accruing from this source in a special fund. Use such portion of this special fund as may be required for the purpose of establishing American built and owned steamship lines to foreign ports from principal seaports of the United States. Establish these lines under the Ocean Mail Act of March 3, 1891, but amend said act only in respect of increasing the compensation by twice the amount named in said act; the present compensation provided by the act mentioned is so low that it has nullified the value of what otherwise is a most excellent law. Double this amount of compensation, and no more will be heard of "Free ships, preferential duties, higher cost of building in the United States, higher wages paid, etc." The increased compensation would enable steamships built in the United States and manned by American crews, at higher wages, to hold their own in competition with vessels of other nations.

And wherein is there any injustice to the American vessel engaged in a protected coastwise trade, in making it subscribe to a fund for establishing American vessels in an unprotected trade? Why should American vessels protected against competition be allowed free use of the canal, while an American vessel that has the temerity to venture into the foreign trade is obliged to pay canal tolls? Domestic trade vessels can well afford to pay tolls, and it is absurd to say that the payment of \$1.20 per ton will decrease the amount of American tonnage that will find use for the canal. Freights, through competition, will be made low enough to satisfy every one.

We especially need vessels for the foreign trade. We want them built in our own yards for the employment of our own people.

We want them as an insurance against the disruption of our commerce in event of war between any two great maritime nations. We want them because they will furnish us with direct, expeditious and regular communication with foreign countries, and that we may secure our share of the world's trade for which all nations strive. We want them as a nucleus for our navy, and, last but not least, for the opportunities that they will give to Americans to follow a sea life, on an American ship, under the American

The Panama Canal law, as it stands at present, provides that domestic coastwise vessels shall not pay tolls. The nation must therefore supply all the deficiency in the cost of maintenance operation and fixed charges, such as interest and sinking fund on the bonds, and this deficiency will be great, because by far the greatest use that will be made of the canal will be by domestic coastwise vessels.

Broadly speaking, it seems absurd that those who find it remunerative to use the canal pay nothing, while the public foot the bills. Under the plan I have suggested here, the nation would acquire something substantial in the way of a Merchant Marine as part recompense for the hundreds of millions it has poured into the canal. Assume

that two years after the canal is opened, the domestic coastwise tonnage averages 8,000,000 tons per annum, and pays tolls of \$1.20 per ton. This would provide a special fund of \$9,600,000. With this amount of money paid out as subsidies to vessels under the act of March 3, 1891. with the compensation as at present provided for increased by double, at least \$80,000,000, would be at once expended in our shippards for vessels of classes that would comply with the law of 1891, and that would enter into the business of carrying mails, passengers and cargo, on direct and regular routes, between the United States and countries with whom we badly need to develop trade.

This suggested plan would make those who use ships pay the subsidies, and this should satisfy those whose opposition to subsidies paid directly out of the treasury has kept up from the sea.'

Mr. Robert Dollar who is so well known in the United States and in Great Britain as the owner of vessels operating both under the American and British flag recommends that the dispute between the two nations caused by a difference in interpretation of the Hay-Paunceforte treaty should be submitted to the Hague for arbitration. and sends us the following in this connection:

HERE can be no doubt in any reasonable man's mind but that the Hay-Pauncefote treaty is subject to different interpretations. The British contention is: First-That we agreed to charge all our vessels, whether foreign-going, coastwise or war vessels, the same as we charge British ships.

Second-Claiming if we exempted any the tolls would higher than if all paid. Therefore, discrimination against British ships.

The American answer is that the words of the treaty "That we shall charge all vessels the same tolls and that 'there shall be no discrimination'." I claim that the essence of the treaty is contained in this clause, that we will not discriminate against British ships. Our American ships engaged in the foreign trade come in direct competition with British shps. Therefore according to the treaty they will pay tolls. This is agreed and conceded by both sides. Then as to the American war vessels which will be continually passing to and fro policing the Canal, it even appears to the British as inconsistent, and I think they have given up this point.

The point at issue seems to be in allowing our coastwise vessels to pass free. We have agreed that we will not discriminate against British vessels. Now how can there possibly be any discrimination against British vessels when they are abolutely prohibited from engaging in our coastwise trade? Therefore, it should be convincing to any reasonably-minded man that where British vessels cannot trade there can be no discrimination against them.

It has been claimed that a great injustice will be done to British Columbia. It can be demonstrated beyond a question of a doubt that on account of American navigation laws restricting our coastwise trade exclusively to American bottoms that the British Columbia lumbermen are complete masters of the situation, with the extra first cost of American vessels being about twice as much as British-built vessels, and then the extra cost of operating. They can pay the tolls, pay the import duty into the United States of \$1.25 per M, and still deliver cargoes in New York for 20 per cent less than American vessels can do after going through the Canal free of tolls and having no import duty on the lumber to pay. Other merchandise from British Columbia for the Eastern seaboard of the United States will be affected in about the same proportion. In fact, under existing conditions, no lumber from

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SENATOR ELIHU ROOT IN FAVOR OF ARBITRATING THE TOLL QUESTION

British Columbia for our Eastern seaboard will be carried in American bottoms, so I claim Congress had a perfect right to legislate to pass our coastwise vessels free. The claim made that the British ships going through the Canal will have to pay a higher rate of tolls on account of so many American vessels going through free is untenable, as no one except a few learned American theorists ever think that the Canal will pay for many years to come. Besides all this, we must meet the competition of Suez, whose dues are rapidly decreasing. Then we have existing waterways. So before any shipowner sends his vessel through the Canal he will figure to see if it will pay. If not, his ships don't come through. Therefore, the force of competition will compel us to make our tolls low enough so vessels will be induced to use the Canal.

Nevertheless, to retain friendship of the English-speaking nations of the world, I think we should submit the question to arbitration, as the paying of tolls sinks into insignificance when we consider that our trade to and from Great Britain and her Colonies amounts to over one and a quarter billion dollars, whereas our trade with the whole world was a little over three and a half billion dollars, our trade with the English-speaking people of the world being about 33 per cent of the whole.

As to the benefits that will be derived from the Canal, the whole world will be benefited, but the United States, and particularly the West coast, will be the greatest beneficiaries. The first great benefit will be immigration to give us people to fill up our vacant lands and to enable us to start manufacturing on a large scale.

With all our great anticipations from having built the greatest engineering work the world has ever seen, it is a sad commentary on our statesmen to reflect that our laws effectually prevent American vessels from using the Canal in the foreign trade. In every session of Congress bills are introduced to restrict and prevent our ships from engaging in the foreign trade. This session all the principal shipowners of the United States appeared to testify before the Senate committee on the great injustice and injury that the bill before them would inflict on our shipping. not one bill is introduced to assist or encourage our shipowners to engage in a business that would make our country truly great. American citizens all over the country who do not know the facts are asking why our merchant marine in the foreign trade has gone out of existence. Just think, what would England be today without her merchant marine, her steam tonnage being equal to all the rest of the world. Therefore, she is by all odds the first commercial nation of the world.

SENATOR ROOT EARNESTLY ADVOCATES ARBITRATION

Extracts From Speech Before the U.S. Senate, January 21, 1913

In the year 1850, Mr. President, there were two great powers in possession of the North American Continent to the north of the Rio Grande. The United States had but just come to its full stature. By the Webster-Ashburton treaty of 1842 our northeastern boundary had been settled, leaving to Great Britain that tremendous stretch of seacoast including Nova Scotia, New Brunswick, Newfoundland, Labrador, and the shores of the Gulf of St. Lawrence, now forming the Province of Quebec. In 1846 the Oregon boundary had been settled, assuring to the United States a title to that vast region which now constitutes the states of Washington, Oregon and Idaho. In 1848 the treaty of Guadalupe-Hidalgo had given to us that great empire wrested from Mexico as a result of the Mexican war, which now spreads along the coast of the Pacific as the state of California and the great region between California and Texas.

Inspired by the manifest requirements of this new empire, the United States turned its attention to the possibility of realizing the dream of centuries and connecting its two coasts—its old coast upon the Atlantic and its new coast upon the Pacific-by a ship canal through the Isthmus; but when it turned its attention in that direction it found the other empire holding the place of advantage. Great Britain had also her coast upon the Atlantic and her coast upon the Pacific, to be joined by a canal. Further than that, Great Britain was a Carribbean power. She had Bermuda and the Bahamas; she had Jamaica and Trinidad; she had the Windward Islands and the Leeward Islands; she had British Guiana and British Honduras; she had, moreover, a protectorate over the Mosquito coast, a great stretch of territory upon the eastern shore of Central America which included the river San Juan and the valley and harbor of San Juan de Nicaragua, or Greytown. All men's minds then were concentrated upon the Nicaragua Canal route, as they were until after the treaty of 1901 was made.

And thus when the United States turned its attention toward joining these two coasts by a canal through the Isthmus it found Great Britain in possession of the eastern

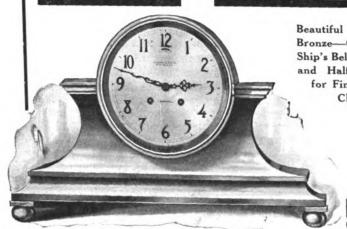
end of the route which men generally believed would be the most available route for the canal. Accordingly, the United States sought a treaty with Great Britain by which Great Britain should renounce the advantage which she had and admit the United States to equal participation with her in the control and the protection of a canal across the Isthmus. From that came the Clayton-Bulwer treaty.

Let me repeat that this treaty was sought not by England but by the United States. Mr. Clayton, who was secretary of state at the time, sent our minister to France, Mr. Rives, to London for the purpose of urging upon Lord Palmerston the making of the treaty. The treaty was made by Great Britain as a concession to the urgent demands of the United States.

I should have said, in speaking about the urgency with which the United States sought the Clayton-Bulwer treaty, that there were two treaties made with Nicaragua, one by Mr. Heis and one by Mr. Squire, both representatives of the United States. Each gave, so far as Nicaragua could, great powers to the United States in regard to the constuction of a canal, but they were made without authorization from the United States, and they were not approved by the government of the United States and were never sent to the senate. Mr. Clayton, however, held those treaties in abeyance as a means of inducing Great Britain to enter into the Clayton-Bulwer treaty. He held them practically as a whip over the British negotiators, and having accomplished the purpose they were thrown into the waste basket.

By that treaty Great Britain agreed with the United States that neither government should "ever obtain or maintain for itself any exclusive control over the ship canal"; that neither would "make use of any protection" which either afforded to a canal "or any alliance which either" might hove "with any state or people for the purpose of erecting or maintaining any fortifications, or of occupying, fortifying, or colonizing Nicaragua, Costa Rica, the mosquito coast, or any part of Central America, or of assuming or exercising dominion over the same," and that neither would "take advantage of any intimacy, or use

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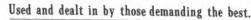
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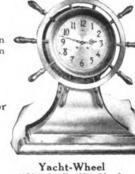


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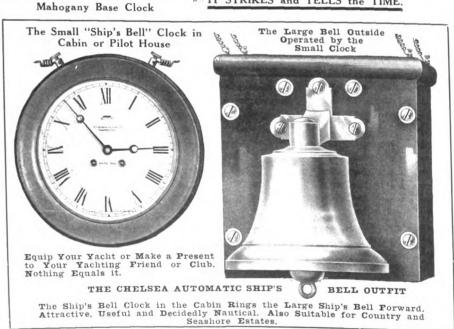
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SENATOR ELIHU ROOT IN FAVOR OF ARBITRATING THE TOLL QUESTION

any alliance, connection, or influence that either" might "possess with any state or government through whose territory the said canal may pass, for the purpose of acquiring or holding, directly or indirectly, for the citizens or subjects of the one, any rights or advantages in regard to commerce or navigation through the said canal which shall not be offered on the same terms of the citizens or, subjects of the other."

You will observe, Mr. President, that under these provisions the United States gave up nothing that it then had. Its obligations were entirely looking to the future; and Great Britain gave up its rights under the protectorate over the Mosquito coast, gave up its rights to what was supposed to be the eastern terminus of the canal. And, let me say without recurring to it again, under this treaty, after much discussion which ensued as to the meaning of its terms. Great Britain did surrender her rights to the Mosquito coast, so that the position of the United States and Great Britain became a position of absolute equality. Under this treaty also both parties agreed that each should "enter into treaty stipulations with such of the Central American states as they" might "deem advisable for the purpose"-I now quote the words of the treaty-"for the purpose of more effectually carrying out the great design of this convention, namely, that of constructing and maintaining the said canal as a ship communication between the two oceans for the benefit of mankind, on equal terms to all, and of protecting the same."

That declaration, Mr. President, is the cornerstone of the rights of the United States upon the Isthmus of Panama, rights having their origin in a solemn declaration that there should be constructed and maintained a ship canal "between the two oceans for the benefit of mankind, on equal terms to all."

Mr. President, after the lapse of some 30 years, during the early part of which we were strenuously insisting upon the observance by Great Britain of her obligations under the Clayton-Bulwer treaty and during the latter part of which we were beginning to be restive under our obligations by reason of that treaty, we undertook to secure a modification of it from Great Britain. In the course of that undertaking there was much discussion and some difference of opinion as to the continued obligations of the treaty. But I think that was finally put at rest by the decision of Secretary Olney in the memorandum upon the subject made by him in the year 1896. In that memorandum he said:

"Under these circumstances, upon every principle which governs the relation to each other, either of nations or of individuals, the United States is completely estopped from denying that the treaty is in full force and vigor.

If changed conditions now make stipulations, which were once deemed advantageous, either inapplicable or injurious, the true remedy is not in ingenious attempts to deny the existence of the treaty or to explain away its provisions, but in a direct and straightforward application to Great Britain for a reconsideration of the whole matter."

We did apply to Great Britain for a reconsideration of the whole matter, and the result of the application was the Hay-Pauncefote treaty. That treaty came before the Senate in two forms: First, in the form of an instrument signed on the 5th of February, 1900, which was amended by the Senate; and, second, in the form of an instrument signed on the 18th of November, 1901, which continued the greater part of the provisions of the earlier instrument, but somewhat modified or varied the amendments which had been made by the Senate to that earlier instrument.

It is really but one process by which the paper sent to

the Senate in February, 1900, passed through a course of amendment; first, at the hands of the Senate, and then at the hands of the negotiators between Great Britain and the United States, with the subsequent approval of the Senate. In both the first form and the last of this treaty the preamble provides for preserving the provisions of article 8 of the Clayton-Bulwer treaty. Both forms provide for the construction of the canal under the auspices of the United States alone instead of its construction under the auspices of both countries

Both forms of that treaty provide that the canal might. be constructed under the auspices of the government of the United States, either directly at its own cost or by gift or loan of money to individuals or corporations or through subscription to or purchase of stock or sharesthat being substituted for the provisions of the Clayton-Bulwer treaty under which both countries were to be patrons of the enterprise.

Under both forms it was further provided that-Subject to the provisions of the present convention, the said government-

The United States-

shall have and enjoy all the rights incident to such construction as well as the exclusive right of providing for the regulation and management of the canal.

That provision, however, for the exclusive patronage of the United States was subject to the initial provision that the modification or change from the Clayton-Bulwer treaty was to be for the construction of such canal under the auspices of the government of the United States, without impairing the general principle of neutralization established in article 8 of that convention.

I shall revert to that principle declared by Senator Davis. I continue the quotation:

"It is not reasonable to suppose that Nicaragua and Costa Rica would grant to the United States the exclusive control of a canal through those states on terms less generous to the other maritime nations than those prescribed in the great act of October 22, 1888, or if we would compel them to give us such advantages over other nations it would not be creditable to our country to accept them.

That our government or our people will furnish the money to build the canal presents the single question whether it is profitable to do so. If the canal, as property, is worth more than its cost, we are not called on to divide the profits with other nations. If it is worth less and we are compelled by national necessities to build the canal. we have no right to call on other nations to make up the loss to us. In any view, it is a venture that we will enter upon if it is to our interest, and if it is otherwise we will withdraw from its further consideration.

The Suez Canal makes no discrimination in its tolls in favor of its stockholders, and, taking its profits or the half of them as our basis of calculation, we will never find it necessary to differentiate our rates of toll in favor of our own people in order to secure a very great profit on the investment."

Mr. President, in view of that declaration of principle. in the face of that declaration, the United States can not afford to take a position at variance with the rule of universal equality established in the Suez Canal convention -equality as to every stockholder and all non-stockholders. equality as to every nation whether in possession or out of possession. In the face of that declaration the United States can not afford to take any other position than upon the rule of universal equality of the Suez Canal convention, and upon the further declaration that the country owning the territory through which the canal was to be

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built would not and ought not to give any special advantage or preference to the United States as compared with all the other nations of the earth. In view of that report the Senate rejected the amendment which was offered by Senator Bard, of California, providing for preference to the coastwise trade of the United States. This is the amendment which was proposed:

"The United States reserves the right in the regulation and management of the canal to discriminate in respect of the charges of traffic in favor of vessels of its own citizens engaged in the coastwise trade."

I say, the Senate rejected that amendment upon this report, which declared the rule of universal equality without any preference or discrimination in favor of the United States as being the meaning of the treaty and the necessary meaning of the treaty.

There was still more before the Senate, there was still more before the country to fix the meaning of the treaty. I have read the representations that were made, the solemn declarations made by the United States to Great Britain establishing the rule of absolute equality without discrimination in favor of the United States or its citizens to induce Great Britain to enter into the Clayton-Bulwer treaty.

In 1826 Mr. Clay, then secretary of state in the cabinet of John Quincy Adams, said, in his instructions to the delegates to the Panama Congress of that year:

If a canal across the Isthmus be opened "so as to admit of the passage of sea vessels from ocean to ocean, the benefit of it ought not to be exclusively appropriated to any one nation, but should be extended to all parts of the globe upon the payment of a just compensation for reasonable tolls."

Mr. Cleveland, in his annual message of 1885, said:

The lapse of years has abundantly confirmed the wisdom and foresight of those earlier administrations which, long before the conditions of maritime intercourse were changed and enlarged by the progress of the age, proclaimed the vital need of interoceanic transit across the American Isthmus and consecrated it in advance to the common use of mankind by their positive declarations and through the formal obligations of treaties. Toward such realization the efforts of my administration will be applied, ever bearing in mind the principles on which it must rest and which were declared in no uncertain tones by Mr. Cass, who, while Secretary of State in 1858, announced that "What the United States want in Central America next to the happiness of its people is the security and neutrality of the interoceanic routes which lead through it."

By public declarations, by the solemn asserverations of our treaties with Colombia in 1846, with Great Britain in 1850, our treaties with Nicaragua, our treaty with Great Britain in 1901, our treaty with Panama in 1903, we have presented to the world the most unequivocal guaranty of disinterested action for the common benefit of mankind and not for our selfish advantage.

In the message which was sent to Congress by President Roosevelt on the 4th of January, 1904, explaining the course of this government regarding the revolution in Panama and the making of the treaty by which we acquired all the title that we have upon the Isthmus, President Roosevelt said:

If ever a government could be said to have received a mandate from civilization to effect an object the accomplishment of which was demanded in the interest of mankind, the United States holds that position with regard to the interoceanic canal.

Mr. President, there has been much discussion for many years among authorities upon international law as to whether artificial canals for the convenience of commerce did not partake of the character of natural passageways to such a degree that, by the rules of international law, equality must be observed in the treatment of mankind by the nation which has possession and control. Many very high authorities have asserted that that rule applies to the Panama Canal even without a treaty. We base our title upon the right of mankind in the Isthmus, treaty or no treaty. We have long asserted, beginning with Secre tary Cass, that the nations of Central America had no right to debar the world from its right of passage across the Isthmus. Upon that view, in the words which I have quoted from President Roosevelt's message to Congress, we base the justice of our entire action upon the Isthmus which resulted in our having the Canal Zone. We could not have taken it for our selfish interest; we could not have taken it for the purpose of securing an advantage to the people of the United States over the other peoples of the world; it was only because civilization had its rights to passage across the Isthmus and because we made ourselves the mandatory of civilization to assert those rights that we are entitled to be there at all. On the principles which underlie our action and upon all the declarations that we have made for more than half a century, as well as upon the express and positive stipulations of our treaties, we are forbidden to say we have taken the custody of the Canal Zone to give ourselves any right of preference over the other civilized nations of the world beyond those rights which go to the owner of a canal to have the tolls that are charged for passage.

Well, Mr. President, asserting that we are acting for the common benefit of mankind, willing to accept no preferential right of our own, just as we asserted it to secure the Clayton-Bulwer treaty, just as we asserted it to secure the Hay-Pauncefote treaty, when we had recognized the Republic of Panama, we made a treaty with her on the 18th of November, 1903. I ask your attention now to the provisions of that treaty. In that treaty both Panama and the United States recognize the fact that the United States was acting, not for its own special and selfish interest, but in the interest of mankind.

The suggestion has been made that we are relieved from the obligations of our treaties with Great Britain because the Canal Zone is our territory. It is said that, because it has become ours, we are entitled to build the canal on our own territory and do what we please with it. Nothing can be further from the fact. It is not our territory, except in trust. Article 2 of the treaty with Panama provides:

The Republic of Panama grants to the United States in perpetuity the use, occupation, and control of a zone of land and land under water for the construction, maintenance, operation, sanitation, and protection of said canal—

And for no other purpose-

of the width of 10 miles extending to the distance of 5 miles on each side of the center line of the route of the canal to be constructed.

It is rather poverty of language than a genius for definition which leads us to call a voyage from New York to San Francisco, passing along countries thousands of miles away from our territory, "coasting trade," or to call a voyage from New York to Manila, on the other side of the world, "coasting trade." When we use the term "coasting trade" what we really mean is that under our navigation laws a voyage which begins and ends at an American port has certain privileges and immunities and rights, and it is necessarily in that sense that the term is used



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SENATOR ELIHU ROOT IN FAVOR OF ARBITRATING THE TOLL QUESTION

in this statute. It must be construed in accordance with our statutes.

Sir, I do not for a moment dispute that ordinary coasting trade is a special kind of trade that is entitled to be treated differently from trade to or from distant foreign points. It is ordinarily neighborhood trade, from port to port, by which the people of a country carry on their intercommunication, often by small vessels, poor vessels, carrying cargoes of slight value. It would be quite impracticable to impose upon trade of that kind the same kind of burdens which great ocean-going steamers, trading to the farthest parts of the earth, can well bear. We make that distinction. Indeed, Great Britain herself makes it, although Great Britain admits all the world to her coasting trade. But it is by quite a different basis of classification—that is, the statutory basis-that we call a voyage from the eastern coast of the United States to the Orient a coasting voyage, because it begins and ends in an American port.

This is a special, peculiar kind of trade which passes through the Panama Canal. You may call it "coasting trade," but it is unlike any other coasting trade. It is special and peculiar to itself.

Grant that we are entitled to fix a different rate of tolls for that class of trade from that which would be fixed for other classes of trade. Ah, yes; but Great Britain has her coasting trade through the canal under the same definition, and Mexico has her coasting trade, and Germany has her coasting trade, and Colombia has her coasting trade, in the same sense that we have. You are not at liberty to discriminate in fixing tolls between a voyage from Portland, Me., to Portland, Ore., by an American ship, and a voyage from Halifax to Victoria in a British ship, or a voyage from Vera Cruz to Acapulco in a Mexican ship, because when you do so you discriminate, not between coasting trade and other trade, but between American ships and British ships, Mexican ships, or Colombian ships This is a violation of the rule of equality which we have solemnly adopted, and asserted and reasserted, and to which we are bound by every consideration of honor and good faith. Whatever this treaty means, it means for that kind of trade as well as for any other kind of trade.

The suggestion has been made, also, that we should not consider that the provision in this treaty about equality as to tolls really means what it says, because it is not to be supposed that the United States would give up the right to defend itself, to protect its own territory, to land its own troops, and to send through the canal as it pleases its own ships of war. That is disposed of by the considerations which were presented to the Senate in the Davis report, to which I have already referred, in regard to the Suez convention.

The Suez convention, from which these rules of the Hay-Pauncefote treaty were taken almost-though not quite-textually, contained other provisions which reserved to Turkey and to Egypt, as sovereigns of the territory through which the canal passed-Egypt as the sovereign and Turkey as the suzerain over Egypt—all of the rights that pertained to sovereigns for the protection of their own territory. As when the Hay-Pauncefote treaty was made neither party to the treaty had any title to the region which would be traversed by the canal, no such clauses could be introduced. But, as was pointed out, the rules which were taken from the Suez Canal for the control of the canal management would necessarily be subject to these rights of sovereignty which were still to be secured from the countries owning the territory. That is recognized by the British government in the note which has been sent to us and has been laid before the Senate, or

is in the possession of the Senate, from the British foreign office.

Mr. President, if we stand in the position of arrogant refusal to submit the questions arising upon the interpretation of this treaty to arbitration, we shall not only violate our solemn obligation, but we shall be false to all the principles that we have asserted to the world, and that we have urged upon mankind. We have been the apostle of arbitration. We have been urging it upon the other civilized nations. Presidents, secretaries of state, ambassadors and ministers—aye, congressesses, the senate and the house, all branches of our government have committed the United States to the principle of arbitration irrevocably, unequivocally, and we have urged it in season and out of season on the rest of mankind.

Mr. President, what revolting hypocrisy we convict ourselves of, if after all this, the first time there comes up a question in which we have an interest, the first time there comes up a question of difference about the meaning of a treaty as to which we fear we may be beaten in an arbitration, we refuse to keep our agreement? Where will be our self-respect if we do that? Where will be that respect to which a great nation is entitled from the other nations of the earth?

Let me read something from President Grant's annual message of December 4, 1871. He is commenting upon the arbitration provisions of the treaty of 1871, in which Great Britain submitted to arbitration our claims against her, known as the Alabama claims, in which Great Britain submitted those claims where she stood possibly to lose but not possibly to gain anything, and submitted them against the most earnest and violent protest of many of her own citizens. Gen. Grant said:

The year has been an eventful one in witnessing two great nations speaking one language and having one lineage, settling by peaceful arbitration disputes of long standing and liable at any time to bring those nations into costly and bloody conflict. An example has been set which, if successful in its final issue, may be followed by other civilized nations and finally be the means of returning to productive industry millions of men now maintained to settle the disputes of nations by the bayonet and by broadside.

Oh, Mr. President, are we Pharisees? Have we been insincere and false? Have we been pretending in all these long years of resolution and declaration and proposal and urgency for arbitration? Are we ready now to admit that our country, that its congresses and its presidents, have all been guilty of false pretense, or humbug, of talking to the galleries, of fine words to secure applause, and that the instant we have an interest we are ready to falsify every declaration, every promise, and every principle? But we must do that if we arrogantly insist that we alone will determine upon the interpretation of this treaty and will refuse to abide by the agreement of our treaty of arbitration.

Mr. President, what is all this for? Is the game worth the candle? Is it worth while to put ourselves in a position and to remain in a position to maintain which we may be driven to repudiate our principles, our professions, and our agreements for the purpose of conferring a money benefit—not very great, not very important, but a money benefit—at the expense of the Treasury of the United States, upon the most highly and absolutely protected special industry in the United States? Is it worth while? We refuse to help our foreign shipping, which is in competition with the lower wages and the lower standard of living of foreign countries, and we are proposing to do this for a part of our coastwise shipping which has now



SENATOR ELIHU ROOT SINCERE IN HIS BELIEF THAT TOLL QUESTION SHOULD BE ARBITRATED

by law the absolute protection of a statutory monopoly and which needs no help.

Mr. President, there is but one alternative consistent with self-respect. We must arbitrate the interpretation of this treaty or we must retire from the position we have taken.

O Senators, consider for a moment what it is that we are doing. We all love our country; we are all proud of its history; we are all full of hope and courage for its future; we love its good name; we desire for it that power among the nations of the earth which will enable it to accomplish still greater things for civilization than it has accomplished in its noble past. Shall we make ourselves in the minds of the world like unto the man who in his own community is marked as astute and cunning to get out of his obligations? Shall we make ourselves like unto the man who is known to be false to his agreements; false to his pledged word? Shall we have it understood the whole world over that "you must look out for the United States or she will get the advantage of you;" that we are clever and cunning to get the better of the other party to an agreement, and that at the end-

Mr. Brandegee. "Slippery" would be a better word.

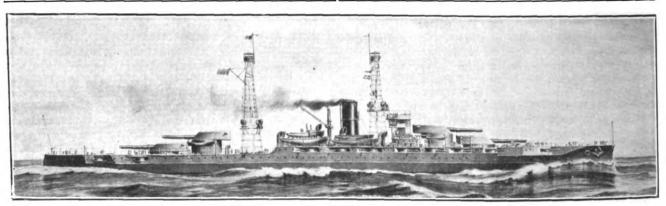
Mr. Root. Yes: I thank the Senator for the suggestion-"slippery." Shall we in our generation add to those claims to honor and respect that our fathers have established for

our country good cause that we shall be considered slippery?

It is worth while, Mr. President, to be a citizen of a great country, but size alone is not enough to make a country great. A country must be great in its ideals; it must be great-hearted; it must be noble; it must despise and reject all smallness and meanness; it must be faithful to its word; it must keep the faith of treaties; it must be faithful to its mission of civilization in order that it shall be truly great. It is because we believe that of our country that we are proud, aye, that the alien with the first step of his foot upon our soil is proud to be a part of this great democracy.

Let us put aside the idea of small, petty advantage; let us treat this situation and these obligations in our relation to this canal in that large way which befits a great nation.

Mr. President, how sad it would be if we were to dim the splendor of that great achievement by drawing across it the mark of petty selfishness; if we were to diminish and reduce for generations to come the power and influence of this free Republic for the uplifting and the progress of mankind by destroying the respect of mankind for us! How sad it would be if you and I, Senators, were to make ourselves responsible for destroying that bright and inspiring ideal which has enabled free America to lead the world in progress toward liberty and justice!



BATTLESHIP NO. 38-"PENNSYLVANIA"

The Act of Congress of August 22, 1912, provided for the construction of the new battleship "Pennsylvania" at a cost for hull and machinery not to exceed \$7,425,000. The total cost of the vessel will be about \$14,173,000. The vessel will be the largest of this class yet designed for the United States Navy.

The plans contemplate a vessel of the following characteristics: Length, 600 ft.; breadth, 97 ft.; draft, about 28 ft. 6 in.; displacement, about 31,000 tons; main battery of twelve 14-inch guns, and four submerged torpedo tubes, supported by a torpedo defense battery of twenty-two 5inch guns. The vessel will be heavily armored and will have oil-burning boilers of the water-tube type.

The lowest bid submitted for the construction of the 'Pennsylvania" on February 18th was by the Newport News Shipbuilding and Dry Dock Company, which offered to construct this vessel on the Department's plans as to hull and equipment and with turbine machinery of the Curtis type without gearing for \$7,235,000; the Fore River Shipbuilding Company's bid under the same conditions was \$7,312,000; the Cramp Company's bid was \$7,399,000, and the New York Shipbuilding Company's, \$7,396,000.

We are advised that the Newport News Shipbuilding Company have been the fortunate bidders.

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NEW FUEL SHIPS FOR THE NAVY DEPARTMENT

The following information regarding the new fuel ships "Kanawha" and "Maumee," the first of which is now building at the Mare Island Navy Yard, was furnished the Pacific Marine Review by Beckman Winthrop, assistant secretary of the navy. The limit of cost on each of these ships, exclusive of armor and armament, was placed at

Fuel Ships "Kanawha" and Maumee"

		Ft.	In.
Length	between perpendiculars	455	
Length	overall	475	

Breadth, molded	56	
Breadth, extreme, to outside of plating		2.7
Depth at mid-length at side, molded	35	9.5
Mean draft to bottom of keel at mean trial d	is- 26	4.0
Mean trial displacement about	14,50	00 (0113
Designed maximum speed, full load		1
The vessels will have tank capacity as followed fuel oil		



NAVAL CONSTRUCTION

The machinery of the "Kanawha" will consist of twin screw, 3-cylinder vertical triple expansion engines

23 -391/2-681/2

of 5,200 total I. H. P. at 100 revolutions per minute and 190 pounds gauge pressure at the high pressure steam chest. There will be four boilers of water tube type, having about 12,000 square feet of heating surface, fitted for burning oil as fuel. The condensing plant will be composed of two main condensers of 7,800 square feet cooling surface, and an auxiliary condenser of 900 square feet cooling surface. A refrigerating plant and distilling plant will be installed. There will be a workshop with machine tool

equipment sufficient to make all ordinary repairs.

The department has under consideration a proposition to install heavy oil engines in the "Maumee," but this has not been fully determined upon. If such engines are not installed the machinery will be similar to that for the "Kanawha."

As above stated, the "Kanawha" is now being built at the navy yard, Mare Island, Cal. The department has not yet deterimned on the yard at which the "Maumee" is to be constructed.

PLANS AND SPECIFICATIONS NOW UNDER WAY FOR LAKE WASHINGTON FERRY

Fred A. Ballin, consulting and contracting engineer and naval architect, with headquarters at Portland, Ore., has prepared preliminary plans for the construction of a ferry-boat for service on Lake Washington. These preliminary plans, which have been approved by the Seattle Dock Commissioners, are for a vessel to be constructed of steel, with a length of 160 feet, and beam 32 feet on hull. The propelling machinery will consist of a pair of inclined high-pressure engines, 16 inches diameter by 72-inch stroke, driving a pair of feathering wheels of 15 feet O. D. The plans for this vessel will be ready for bids the first week in March, after they have been finally approved by the Commissioners.

Mr. Ballin has recently formed a partnership in his engineering profession with J. B. C. Lockwood, who for some time past has been associated with the Port of Portland Commission.

Mr. Ballin is also preparing the detail drawings for the U. S. Engineers' dredges "Multnomah" and "Wahkiakum," under contract by the Portland Iron Works, and work is also advancing on the detail drawings of the Duwamish waterway dredge and on a set of plans for a similar dredge for the Pacific Dredging Company of Vancouver, B. C.

Hough's System of Ship Construction

For the Economical Handling of Lumber, Steel Material and Other Like Cargo

Por Particulars Write

EDWARD S. HOUGH, Consulting Engineer
16 California Street San Francisco, Calif.

S	Vessels	Under	Construction	for			
s	No Wa		O4		P		mpletion
t	No. Ve	essel.	Contracto			Tota	d. Ship.
y	24 "Norm	Vonle!	Battlesi	iibs	37 3	60.6	66.3
r	34 New	IOFK -	-New York Na	ıvy	raru	09.0	81.4
	36"Nova	do". Fo	vport News S. ore River S. B.	D.	CO	10.6	5 5.9
,	37—"Oblai	homo"	New York S.	D (٠	110	7.8
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	44—"Cumr	nings"	-Rath Iron W	orks		68.5	67.8
	45"Down	es"-Ne	Bath Iron Work S. B. re River S. B.	Co		37.1	33.1
	46"Dunca	an"—Fo	re River S. B.	Co.	····	63.0	59.9
	41- Aylwi	n — w n	a. Cramp & Sc)ns		83.5	81.5
	48-"Parke	r"—Wn	n. Cramp & So m. Cramp &	ns		77.9	75.8
	49 "Benha	m''W:	m. Cramp &	Sons	3	72.4	69.8
	50"Balch	"Wm.	Cramp & Sor	ıs		81.1	79.2
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	23—"F-4"—	Electric	Boat Co. (S	eatt	ile)	94.6	94.6
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3	4"K-3"E	Clectric	Boat Co. (Sar Boat Co. (Se	n Fr	an.)	68.1	66.8
3	5" K -4"E	Clectric	Boat Co. (Sea	attle)	66.1	62.9
- 3	6"K-5"F	llectric	Boat Co. (Qui	nev)		48 5	42.4
3	7—"K-6"—E	llectric	Boat Co. (Qu	incv)	48.5	42.4
- 33	5—"K-7"—E	Hectric	Boat Co. (Sai	ı Fr	an.)	55.6	53.7
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		GETTIN	IG TIME BY	RΔ	חוח		

Vessels Under Construction for United States Navy

GETTING TIME BY RADIO

Referring to the fact that time signals are sent daily from the U. S. Naval Radio Stations, shipmasters are requested to state in their marine data reports to the Hydrographic Office what success they have in taking advantage of this service and give the following details: State name of sending station, position of ship, ship's time, and distance from sending station.

Capt. E. Thomas, of the British steamer "Cestrian," says: "I have been receiving the time signals regularly every day except Sundays and holidays. I find it a splendid check on my chronometer rates. On my last voyage, west bound to the Gulf of Mexico, I received the time 160 miles east of Abaco, Bahamas, and found that the chronometers were out 8 seconds in a passage of 14 days from Liverpool; that is, the ship was 2 miles east of the chronometer rate. I must say that the wireless department of the navy is doing great work for safety of seafarers."

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LLOYDS REGISTER OF BRITISH AND FOREIGN SHIPPING ISSUE REPORT SHOW. **ING SHIPBUILDING DURING 1912**

United Kingdom-Particulars of Total Output,

During 1912, exclusive of war ships, 712 vessels of 1,738, 514 tons gross (viz., 643 steamers of 1,720,957 tons and 69 sailing vessels of 17,557 tons) have been launched in the United Kingdom. The sailing ship tonnage is composed. however, almost entirely of barges and similar craft. The war ships launched at both Government and private yards amount to 30 of 191,737 tons displacement. The total output of the United Kingdom for the year has therefore been 742 vessels of 1,930,251 tons.

The output of mercantile tonnage in the United Kingdom during 1912 shows a decrease of 65,330 tons on that of last year. As regards war vessels the total is 39,049 tons less than in 1911.

Practically the whole of the tonnage launched has been built of steel, and nearly 99 per cent is composed of steam tonnage

Comparison of Tonnage Afloat, 1911-1912

Of the total output over 76 per cent, or 1,322,995 tons (1,313,683 steam tons and 9,312 sailing tons), has been built for registration in the United Kingdom.

In this connection it should be noted that, from the information at present in the possession of Lloyd's Register, the gross tonnage of United Kingdom vessels lost, broken up, etc., during the last twelve months appears to have been 308,000 tons (286,000 steam, 22,000 sail), while the sales to foreign and colonial owners have reached the record total of 704,113 tons (649,368 steam, 54,745 sail). On the other hand, 6,144 tons (5,196 steam, 948 sail) were built abroad for United Kingdom owners, and purchases from foreign and colonial owners during the same period amounted to 37,877 tons (36,462 steam, 1,415 sail).

The steam tonnage of the United Kingdom would thus appear to have increased by about 420,000 tons, and the sailing tonnage to have decreased by about 65,000 tons. The net increase of United Kingdom tonnage at the end of 1912 is therefore about 355,000 tons.

Vessels Launched for Abroad

The annual amount of tonnage launched for abroad during 1912 was 415,519 tons, forming 23.9 per cent of the total output, as compared with 22 1-3 per cent in 1911 and 191/2 per cent in 1910. The British Colonies have provided the largest amount of work for the shipbuilders of the United Kingdom, viz., 47 vessels of 72,970 tons (nearly 4 1-5 per cent of the total output). Norway occupies the second position with 69,006 tons, being followed by Germany (43,154 tons), Holland (40,678 tons), Spain (31,320 tons), and Austria-Hungary (27,962 tons).

Size and Speed of Vessels

The number of large steamers launched in the United Kingdom during 1912 has greatly exceeded the average of recent years. During the years 1892-96, 47 vessels of 6,000 tons and upwards were launched in the United Kingdom; in the following five years, 1897-01, the number rose to 166; in the next five years, 1902-06, 156 were launched, and during the five years 1907-11, 167 such vessels were launched. Of vessels of 10,000 tons and upwards, only five were launched in the five years 1892-96; 32 were launched during the five years 1897-01; 29 were launched during the five years 1902-06, and 48 during the five years 1907-11.

The returns for 1912 show that 69 vessels of 6,000 tons and above were launched. Of these 16 were over 10,000 tons each, the largest being the White Star steamship "Ceramic," of 18,600 tons, and the Canadian Pacific steamers "Empress of Asia" and "Empress of Russia," 16,850 tons each. The following are the other vessels of 11,000 tons and upwards, viz.:

	7	Tons Gross.		
"Nestor"	14,200	"Drina"	11.240	
"Niagara"	13,500	"Beltana"		
"Darro"	11,484	"Benalla"		
"Desna"	11,483	"Kristianiafjord"		

The average tonnage of steamers launched in the United Kingdom during 1912 is 2,676 tons; but if steamers of less than 500 tons be excluded the average of the remaining steamers reaches 3,955 tons gross, which is a considerable advance on the mean of the averages of the previous five

Of the vessels launched in the United Kingdom 24 are capable of a speed of 16 knots and above. The fastest of these are the turbine vessels "Empress of Asia," "Empress of Russia" and "Wahine," two other turbine steamers intended for service on the Irish Channel and one for service on the Clyde, all designed for a speed of 20 knots.

Vessels Fitted With Turbines and Internal Combustion Engines

Four steamships, viz., "Ceramic," "Niagara," "Reina Victoria Eugenia" and "Infanta Isabel de Borbon," with a total tonnage of 51,890 tons, are being fitted with a combination of turbines and reciprocating engines. During 1912, including the vessels mentioned in the preceding paragraph, eight steamers were launched with a total tonnage of 42,261 tons which will have turbines only.

The launches for the year also include 11 vessels of a total tonnage of 6,000 tons with internal combustion engines, the largest being the "Fordonian," of about 2,000 tons. These figures also include the "Y. Ddraig Goch," of about 1,000 tons, fitted with gas engine.

Other Special Types

Of steamers building on the Isherwood system of longitudinal framing, 31 were launched during 1912, with a gross total tonnage of 153,702 tons. Including six of these vessels with a tonnage of 24,856 tons, there were launched during the past year 18 steamers of 90,222 tons for the carriage of oil in bulk. The returns also include 7 vessels of other special constructional design; 127 steam trawlers, whalers and other fishing vessels; 83 dredges and barges; 24 tugs; 5 yachts; besides a number of other vessels de signed for channel, river and other special services.

Progress of Shipbuilding During the Year

As regards the movement of the shipbuilding industry during the course of 1912, Lloyd's Register returns show that, at the opening of the year, irrespective of war ships, 1,519,052 tons were being built in the United Kingdom. The returns for the March quarter indicated an incerase of about 87,000 tons and 73,000 tons, respectively. amount of tonnage under construction at the end of December (1,970,065 tons), is greater than any ever reached before and exceeds by 451,000 tons the amount at which it stood at the end of 1911. The total war ship tonnage under construction in the country is now 496,875 tons displacement, as compared with 408,755 tons twelve months

Work in Hand at the End of 1912

At the end of December there were under construction, including a number of vessels already launched but not completed, 69 vessels of between 6,000 and 10,000 tons: 25 of between 10,000 and 15,000 tons; 10 of between 15,000and 20,000 tons; 2 of between 20,000 and 40,000 tons, and 2 of over 40,000 tons each.

Many of these are of special interest, amongst which are the following, not already named in the foregoing notes: (a) The Cunard steamship "Aquitania," of 45,000 tons: two Allan Liners, of 16,000 tons each, and four other steam-



)W.

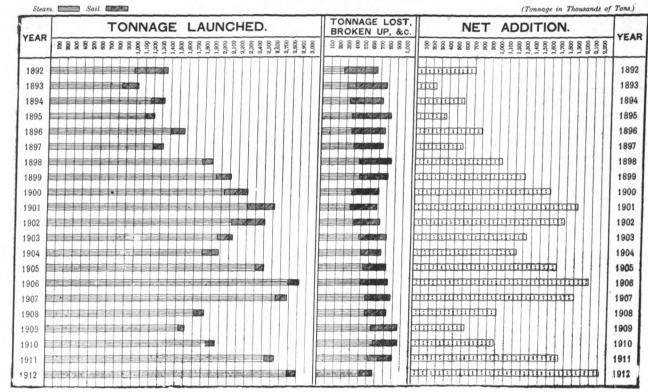


Chart Showing the Gross Tonnage Launched in the World and the Gross Tonnage Lost, Broken Up, Etc., Also the Net Addition to the World's Gross Tonnage for Each Year From 1892 to 1912.

ers of a total tonnage of 4,150 tons, all to be fitted with steam turbines.

(b) Nine steamers, with a total gross tonnage of 194,380 tons, which will all be fitted with a combination of steam turbines and reciprocating engines, viz.: "Britannic," 50,000 tons, White Star Line; one, 32,500 tons, Holland-Amerika Line; one, 27,000 tons, Red Star Line; two, 29,900 tons, Royal Mail S. P. Co.; two, 31,200 tons, Pacific Steam Navigation Co.; one, 14,980 tons, Geo. Thompson & Co.; one, 8,800 tons, McIlwraith, McEacharn & Co.

(c) Two vessels of between 3,000 and 4,000 tons each, besides a number of small craft, for which the propelling power will be internal combustion engines.

(d) Forty steamers to carry oil in bulk, with a total tonnage of about 231,000 tons.

(e) Forty-six steamers of about 267,000 tons, which are building on the Isherwood longitudinal framing system. Thirty-one of these vessels, of about 194,000 tons, are oil-carrying vessels, and are included in the figures given in paragraph (d).

Colonies and Foreign Countries

There have been launched abroad, during the year, 1,007 vessels of 1,163,255 tons (720 steamers of 1,074,911 tons and 287 sailing vessels of 88,344 tons). These figures show the very large increase of about 317,000 tons as compared with those for 1911. Among foreign countries the leading places are held by Germany (375,317 tons), the United States of America (284,223 tons), France (110,734 tons), Holland (99,439 tons), Japan (57,755 tons), and Norway (50,255 tons).

The returns for the year include 36 vessels of between 4,000 and 6,000 tons; 27 of between 6,000 and 8,000 tons; 9 of between 8,000 and 10,000 tons; and the fast turbine steamer "Imperator," of about 52,000 tons, launched in Germany. In addition, 4 colliers of about 10,000 tons each were launched for the United States Navy. During 1912 seven vessels of over 3,000 tons each, to be fitted with internal combustion engines, were launched abroad. Their aggregate tonnage amounted to about 30,000 tons. Two other vessels of over 1,000 tons each, and a large number

of vessels of small tonnage similarly fitted were also launched.

The output abroad for the year also includes 10 oilcarrying steamers of a total tonnage of 44,154 tons.

The total output of war vessels abroad (144 of 342,892 tons displacement) shows the large decrease of over 195,000 tons displacement on the figures for the preceding year.

United States

The tonnage reported from the United States (284,223 tons) is over 112,000 tons higher than that of the previous year. The bulk of this increase is due to the greater activity of the shipyards on the coast. The tonnage launched on the Great Lakes amounts to nearly 90,000 tons, and includes six vessels of over 5,000 tons, the largest being of about 8,600 tons. On the coast there were only launched 4 sea-going merchant steamers of between 5,000 and 7,000 tons each, and 4 colliers of about 10,000 tons each for the United States Navy, one of which, the "Jupiter," is to be driven by electric motors worked by an alternator connected to steam turbines.

Besides the above vessels, there were building at the end of 1912, 11 merchant steamers of between 5,000 and 9,000 tons each.

At the end of December there were under construction abroad 1,368,671 tons gross (1,337,078 tons steam and 31,-593 tons sail). Germany occupies the first position with 542,519 tons, and next come the United States with 236.-185 tons, France with 175,588 tons, and Holland with 114,-811 tons. These figures are exclusive of vessels for service on inland rivers. Of vessels the construction of which had been actually commenced, but which were not vet launched, there were 73 steamers of between 5,000 and 10,000 tons (30 of which are building in Germany); 7 steamers of between 10,000 and 15,000 tons, and 5 steamers of over 20,000 tons, all in Germany, the largest being of about 58,000 tons and 35,000 tons, respectively. These figures include 3 vessels (96,000 tons) to be fitted with turbines; 3 of 39,000 tons with a combination of turbines and reciprocating engines, and 6 of 33,000 tons to be fitted with internal combustion engines.

THE DEVELOPMENT OF THE SHIP FROM THE EVOLUTION OF THE BOAT

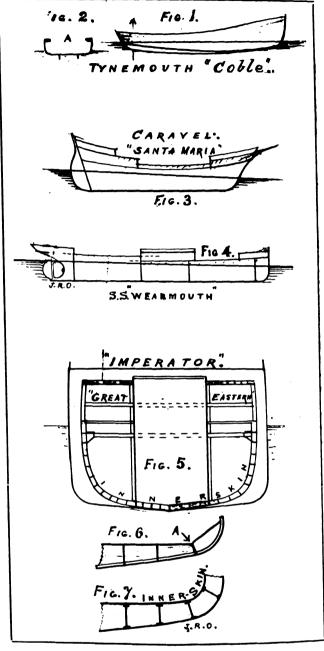
By Jos. B. Oldham, H. A.

HE builder of the first open boat, that child of the ages, constructed with narrow plank and stiffened with bent cross-ribs, would be more than surprised were he to awake in the flowery kingdom or on the banks of the Nile, after his infinitely more prolonged sleep than that enjoyed by the amiable Dutchman Rip Van Winkle, to behold the marvelous development of his crude construction. built from necessity and regardless of scientific lore, but which is the genesis from which the fifty thousand ton leviathan, as well as the fifty mile an hour war craft, are developed. And it may be that greater merit is due that aboriginal shipwright who, without examples to inspire or precepts to guide, produced the first Sanpan or Junk with center or lee-boards; than is due that splendid genius who designed and constructed the "Great Eastern," the first longitudinally constructed ship, but who had the advantage of standing on the "Britannia" bridge, which proved the ample tenacity of iron riveted connections; and who then surveyed the celebrated "Great Britain," demonstrating the reliability of iron frames and shell plating, though attached to an oak keel, forming a combination which no waves could destroy nor storms long delay. These ships gave perfect satisfaction to those in charge of them at sea, but their cargo holds were too capacious for the freight accumulation and handling facilities of these days, and to this must be ascribed the financial failure of Brunel's greatest achievement.

It may now be demonstrable that the old, or even antideluvian, open boat, the ancient Spanish Caravel; and the greatest iron structure of A. D. 1858, are each, respectively, the prototypes of the modern motor boat, the steel screw collier, and the most modern trans-Atlantic liner, in which type naval architecture finds its highest expression.

Up to about a decade ago, high speed power boats were commonly constructed with deep deadwood aft, very similar to the old fishing boats, with the waterline tapering away horizontally to a thin edged stern post which was deeply immersed. But it was then discovered that less frictional and eddy resistance accrued with a very broad waterline associated with the lightest draft at the extreme after end.

Whether the designer of that new form had seen the east coast "Cobles," or not, is problematical, but their profile was like Figure 1. Their aftermost section similar to Figure 1. From this it may be inferred that the model of the modern high speed motor boat was virtually in existence some hundreds of years age, as no one on the banks of the Tyne, Wear, or at the Hartlepools, appear able to fix a limit to the antiquity of those easily propelled and most seaworthy little craft. Now, if we take another step forward from the motor boat to the East Coast Screw "Collier," it may be seen that her structural design closely resembles the ancient Spanish "Galleons," such as the classic "Santa Maria," as each, though not of great length, have two "breaks," and raised decks between mid' length and the stern, several of these vessels were built on the east coast and elsewhere, under my supervision about the years 1880-5. We, who are still living under the sun, seem almost incapable of discovering anything that is absolutely new even in mechanical construction, as even the latest improvement, or amendment, to one of the greatest of structures, was fully exemplified when the best of hulls was broken up and sold for scrap iron on the west bank of the Mersey about a quarter of a century ago. Had this example been closely followed an inestimable saving might have resulted.



A common form of bottom construction, even in the largest structures, was like Figure 6, now, it would not demand the highest talent to place a ban on such a connection between the bottom and sides, it being lamentably weak at the point A, consequently, to attain symmetry of form we must again draw upon the genius of Brunel and continue the upper bottom up the sides by a regular curve. forming an inner skin as shown in Figure 7, or in the mid section drawn within the outline of the great "Imperator," which makes the "Great Eastern" look small. For great structural strength possibly no large ship has ever equalled the "Clympic," as improved in the manner shown by the Pacific Marine Review of February, 1913. I estimate that the steel used in this improvement will equal more than one-half of the weight of the steamers "Siberia" or "Korea," and the total cost would probably equal the value of a five thousand ton "tramp" steamer, while the augmented draft of water, due to weight added, will be about two feet. The enjoyment of passengers, however, will not be affected

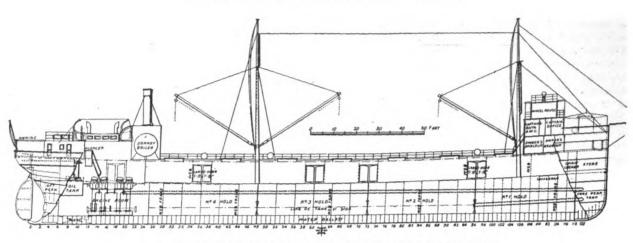


BOA'

Generated on 2024-07-25 15:10 GMT / https://hdl.handl. Public Domain, Google-digitized / http://www.hathitru by this increased immersion; the vessel being fitted up luxuriously, like the "cabins de luxe of a Grecian or Roman galley, with paintings, statuary, "marble baths and libraries."

The great firm who have built most of these large vessels, seem to have had more than their share of ill-luck, at least I know of nothing equal to their misfortunes, although the late Duke of Devonshire was not far behind when, as head of the great Barrow Shipbuilding Works, he

had to take back the "City of Rome" as a partial failure. Then, it was understood at the Liverpool Registry, that the alterations to the (then) new "Britannic" cost Messrs. Harland & Wolff some three hundred thousand dollars; but possibly Messrs. Ismay Imrie contributed some part of that loss. On the other hand, however, there is a very nice balance to the credit of the builders of the "Olympic." Iron decks, pole masts, midships cabins, and also straight stems, at least in the Atlantic trade, were introduced almost solely by Harland & Wolff.



S. .S "FORDONIAN" NEW CANADIAN OIL-ENGINED VESSEL

An oil-engined vessel, the "Fordonian," has just been finished and has received her initial trials. The ship was built by the Clyde Shipbuilding and Engineering Company, Limited, of Port Glasgow, Scotland, and is the first vessel built on the Clyde propelled by two-stroke cycle Diesel oil engines.

The Canadian Engineer has the following regarding the "Fordonian":

The leading dimensions of the ship are 250 ft. long, 42 ft. 6 in. beam, 16 ft. 10 in. moulded depth to the main deck, and 26 ft. 6 in. to the awning deck. The "Fordonian" has a 2-ft. frame pitch, and a dead-weight cargo-carrying capacity of 3,300 tons on 16 ft. 6 in. draught. The draught on service is restricted to 14 ft., and the dead-weight capacity is thus reduced to 2,200 tons. She is built to Lloyd's highest class for the Canadian Interlake Line, Limited, of Toronto, for grain-carrying on the Great Lakes of Canada.

As with sister-ships, there are two masts with derricks on each, and the chart-house and navigating bridge are situated right forward. The rudder is balanced and is of large area. In the trials the vessel turned almost in her own length, and when the helm was put hard over she almost came to a dead stop.

The propeller is 11 ft. 9 in. in diameter by 9 ft. pitch.

The main propelling engine is a four-cylinder two-stroke cycle single-acting Carels type of Diesel oil-engine. The cylinder dimensions are 460 mm. (18.1 in.) diameter by 820 mm. (32.25 in.) stroke, and the engine runs normally at about 100 revolutions per minute. The bed-plate is of cast iron and is of the usual marine design, having a flat bottom and being supported in the centre as well as at the sides. This design contrasts with that evolved by many Continental makers, who prefer the bed-plate supported at the sides only, with the cross-members of deep box section carrying the main bearings, which have forced lubrication. The columns of the engine are of the usual box section, bolted rigidly together at the top, and are very thick, to withstand the tension stresses consequent

upon the high pressures of the Diesel cycle. These tend to give great rigidity; the engine ran entirely free from vibration. With this design of support the bed-plate must be strong to take the bending stresses between the column feet and the main bearings.

The arrangement of the engine into two units of two cylinders each permits of a two-piece crank-shaft in interchangeable halves, of the vertical spiral drive for the valve gear being taken from the centre of the engine, and also of the scavenging-pumps being driven from the two centre crossheads by links, as with the air-pump of steam-engines. The dimensions of the double-acting scavenging air-pumps are 27¼ in. in diameter with a 23½-in. stroke, and give thus a ratio of free air compressed for scavenging to combustion air taken into the main cylinders of 1.65, which is higher than the usual practice. The pressure of the scavenging air is 3 lb. per sq. in.

The system of lubrication is interesting. For the main bearings solidified oil is used, for the crank-pin bearings the ordinary drip-feed suffices, and the bearing pressures for the main and crank-pin bearings are respectively about 300 lb. and 650 lb. per sq. in. For the lubrication of the crosshead bearing, a small lubricating-oil forcing-pump is attached to each crosshead, and worked by the swing of each connecting-rod, as shown. This system of lubrication permits of an open crank-case, and the bottom end bearings can always be easily felt by the engineer on watch. There are two guides for each, such being Messrs. Carels' practice for oil-engines. The piston is lubricated by four Mollerup lubricators, which force the oil between the piston and the cylinder; there are four inlets to the cylinder, and they are arranged to enter on the fore-and-aft and athwartship centre lines.

The control of the engine is by means of one wheel and two levers on the starting-platform; one lever controls the compressed-air engine, which gives the cam-shaft its angular displacement by raising or lowering the vertical driving-shaft, and also gives the manoeuvering-shaft its fore-and-aft movement. The other lever controls the fuel. The wheel operated by hand, gives the manoeuvering-shaft its rotary motion. The cams upon the manoeuvering-shaft act upon the suction-valves of the fuel-oil pump. Hand control is also provided by the handle on the column, which actuates a shaft running fore and aft on the engine, and so sets all the fuel-pump suction-valves. Although compressed air is used for actuating the vertical shaft, causing the angular rotation of the cam-shaft and the rotation and displacement of the manoeuvering-shaft, hand-gear in emergency may be used.

There is fuel storage in two oil-tanks placed on both sides of the oil-fired donkey boiler, and two ready-use tanks are placed aft of the engine room, and are provided with steam heating coils, while the oil is filtered, on its way to the fuel-pumps of the main engines, through 15-gallon filters in the engine-room. In all 105 tons of oil fuel is carried, whereas with the sister steamships 250 tons of coal is required. The consumption per day for all purposes is 5 tons of oil fuel, against 14 tons of coal.

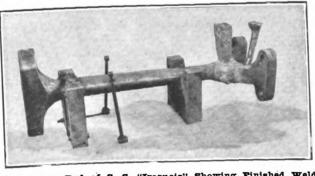
The fuel consumption of this engine is 0.47 lb. per brake horse-power per hour, and this is good practice for two-stroke cycle engines with the scavenging-pump and air-

compressor driven off the main engine. The pressure of compression is 490 lb. per sq. in. The indicated horse-power at 102 revolutions per minute and 90 lb. per sq. in. is 970; 10 knots were achieved with the engines doing 128 revolutions per minute. The maximum revolutions were 140, the normal about 102, and the minimum 46. The results will undoubtedly be improved upon when the engines are finally tuned up, as prior to the trial trip they had only been run in dock trials for twelve hours in all. This is exactly the same treatment as is given to steamengines.

The crank-shaft is in two interchangeable pieces, and there are two scavenging-pumps of large capacity. The auxiliary air-compressor is of half the capacity of the main compressor, and since the vertical shaft drive for the valve-gear is in the centre of the engine, should the compressor give out, one scavenging-pump fail, or even the crank-shaft break, the main engine will still develop more than half its normal power. This type of engine seems very suited to the propulsion of cargo boats, and the saving in space consequent upon the adoption of the Diesel engine for this ship is five frame spaces, aggregating 10 ft., some 33 per cent of the machinery space.

AN UNUSUALLY QUICK REPAIR OF A CONNECTING ROD—WORK EXECUTED BY THERMIT PROCESS FOR SS. "IROQUOIS" OF THE CLYDE LINE

An extraordinary quick repair was executed for the Clyde Line last December when the connecting rod of one of the main engines of the S. S. "Iroquois" broke while the vessel was at sea. A wireless message to this effect was sent to the general offices of the Clyde Line and they immediately communicated with the Goldschmidt Thermit Company and arranged for a representative to meet the "Iroquois" upon her arrival. The steamer reached her pier at eleven p. m. Tuesday, December 24th, and the connecting rod was immediately removed, placed on a truck and taken to the Jersey City Repair Shops of the Goldschmidt Thermit Company. Work was then started to prepare the broken piece for welding. To do this, part of it had to be cut away along the line of the fracture so as to provide a space about one inch wide for thermit steel to flow into. The parts were then lined up and surrounded by a mold which provided for a reinforcement or collar all around the broken parts which was later to be filled with steel from the thermit reaction. This mold was completed early Christmas morning and the operation of preheating commenced. This was done with a compressed air gasoline torch which brought the broken sections inside of the mold to a bright red heat, at which time the charge of thermit



Connecting Rod of S. S. "Iroquois" Showing Pinished Weld With Metal Left in Pouring Gate and User, Which was Afterwards Removed

was ignited in the crucible suspended over the pouring gate of the mold. The thermit reaction produces liquid steel in half a minute and this steel being twice as hot as ordinary molten steel will melt the metal that it comes in contact with and amalgamate with it to form a single homogenous mass. In this repair therefore the thermit steel was tapped into the mold where it amalgamated with the metal of the connecting rod and the whole cooled down into one solid piece.

As stated, this work was completed on Christmas day and the rod was allowed to cool over night. On the morning of December 26th the mold was dismantled, the weld trimmed up and the rod returned to the steamer. She was due to sail early in the afternoon of the 26th and could have done so had she not been held up for a few hours on account of cargo. No delay at all was occasioned by the repair of the connecting rod.

Our readers may be interested to know that two vessels of the Clyde Line "The Apache" and the "Arapahoe" have thermit welds on their stern frames. The "Apache" was welded July, 1905, and the "Arapahoe" in June, 1909.

The Thermit process offers many advantages for repairs of this character owing to the fact that the sections can be welded without their removal from the vessel and without keeping the vessel in dry dock more than two or three days at the most. The saving in dry dock charges is a very large item and the fact that the vessel can be so quickly restored to service is another great advantage.

The Ballin Watertube Boiler Company, of Portland, Ore., has had a very successful year and the contracts recently received by this company include a boiler for the steamer "Rochelle," used on the coasting lumber trade; two for the Portland fireboat of 7,000 square feet of H. S.; two for the U. S. ocean-going dredge "P. S. Michie" of 6,600 square feet H. S.; two for the new steamer "Tacoma," building for the Inland Navigation Company, boilers having 11,200 square feet; and two boilers for the Duwamish waterway dredge, having 7,000 square feet H. S.



AIDS TO NAVIGATION

On or before March 1st a fog alarm is to be established by the Dominion Government at the Cape Mudge Light Station, immediately south of the lighthouse, lat. N. 50 deg. 5 sec., long. W. 125 deg. 13 min. 18 sec; the same to be a diaphone operated with air, compressed by an oil engine. It will give one blast of two seconds' duration every thirty seconds, thus: Blast, 2 secs.; silent interval, 28 secs.; blast, 2 secs.; silent interval, 28 secs.

Arthur Passage, Herbert Reef—Light to be established on beacon. Former notice—No. 15 (36) of 1911. Position—Cn the southernmost rock of Herbert Reef, lat. N 54 deg. 1 min., long. W. 130 deg. 14 min. Light to be established—A light will be established on this concrete beacon without further notice. Character—White light, automatically occulted at short intervals. Elevation—32 feet. Visibility—11 miles from all points of approach by water. Order—Dioptric. Illuminant—Acetylene, generated automatically. Structure—Steel cylindrical tank standing on the concrete beacon and surmounted by a pyramidal steel frame supporting the lantern. Color—The steel tank and steel frame are painted white. Remarks—The light will be unwatched.

Chatham Sound, Holland Island. New lighthouse. Change in character of light. Former notice—No 67 (188) of 1912. Position-On Holland Island, lat. N. 54 deg. 10 min. 19 sec., long. W. 130 deg. 21 min. 42 sec. Character-Fixed white light. Elevation-45 feet. Visibility-12 miles from all points of approach. Power-750 candles. Order -Fourth dioptric. Illuminant-Petroleum vapor, burned under an incandescent mantle. Structure-Rectangular building, standing on a concrete foundation. The tower is square and rises above the roof from the northwest corner of the builidng. Octagonal lantern. Material-Building, wood; lantern, iron. Color-Building white with a red roof; lantern red. Height-43 feet from the top of the concrete foundation to the top of the ventilator of the lantern. Remarks-A diaphone fog alarm is being installed in this lighthouse, of which further notice will be given when it is ready to be put in operation.

The United States Government has recently purchased from the Safety Car Heating & Lighting Company of New York 43 Pintsch beacons for use on the St. Mary's river. These beacons will use high-pressure Pintsch gas and 6-foot high-pressure Pintsch gas flasks. They will also use 300 mm. Pintsch mantle lanterns.

The United States Government has also purchased from this company five range lights for use on the Detroit river.

Willamette River, Oregon—Channel to Portland—Linton Landing light—Characteristic of light changed and intensity decreased, January 13, by changing from fixed white to a fixed red light, decreasing the intensity from 45 to 15 candlepower.

Stephens Passage, Alaska—Grave Point light established —Light permanently discontinued January 3.

A group flashing white light, of about 180 candlepower, showing a double flash every 10 seconds, thus:

Flash, 0.5 sec.; eclipse, 1.5 sec.; flash, 0.5 sec.; eclipse, 7.5 sec.

Established about 45 feet above water, on top of a small white wooden house on extreme end of point.

Midway Island light, 151 deg. true (SE. by E. 7-16 E. mag.) Station Point, tangent, 199 deg. true (S. by E. 1/2 E. mag.) Grand Island, left tangent, 301 deg. true (NNW. 1/2 mag.) Position: Lat., 58 deg. 03 min. 33 sec. N:; long., 134 deg. 02 min. 29 sec. W. The illuminating apparatus is a lens lantern burning acetylene. The light is unwatched.

Johnstone Strait, B. C.—Cracroft Island, westward of Boat Harbor. Light to be established. Date of establishment—Cn or about March 1st, 1913, without further notice. Position—On south side of Cracroft Island, about three-quarters mile west of Boat Harbor, seven-tenths mile, 262 deg. 40 min. (S. 57 deg. W. Mag.) from the southwest extremity of the island in Boat Harbor. Lat. N. 50 deg. 31 min. 17 sec., long. W. 126 deg. 34 min. 42 sec. Character—White light, automatically occulted at short intervals. Elevation—60 feet. Visibility—13 miles from all points of approach by water. Order—Dioptric. Illuminant—Acetylene, generated automatically. Structure—Steel cylindrical tank standing on a steel framework and surmounted by a pyramidal steel frame supporting the lantern. Color—White. Remarks—The light will be unwatched.

Tolmie Channei, B. C.—Swindle Island, Separation Point. Gas-lighted beacon established. Position—On Separation Point, the north point of Swindle Island. Lat. N. 52 deg. 41 min. 20 sec., long. W. 128 deg. 34 min. Character—White light, automatically occulted at short intervals. Elevation—31 feet. Visibility—10 miles from all points of approach by water. Order—Dioptric. Illuminant—Acetylene, generated automatically. Structure—Steel cylindrical tank standing on a steel framework and surmounted by a pyramidal steel frame supporting the lantern. Color—White. Remarks—The light is unwatched.

Queen Charlotte Islands.—Houston Stewart Channel, Flat Rock. Light discontinued, beacon removed. Former notice—No. 100 (280) of 1912. Position—On Flat Rock. Lat. N. 52 deg. 6 min. 30 sec.; long. W. 131 deg. 12 min, 30 sec. Light discontinued—The occulting white light has been discontinued. Beacon removed—The gas beacon has been removed to Separation Point, Tolmie Channel.

Union Marine Insurance Company, La.

Head Office Liverpool, England

Losses made payable at any principal ports of the world.

FRANK WATERHOUSE & CO., Inc.

Marine Insurance Department

Norman Waterhouse in Charge

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THE PACIFIC MARINE REVIEW'S CHANGE OF OWNERSHIP

During the past month the transfer of the Pacific Marine Review has been successfully accomplished from its founder and former owner Mr. H. B. Jayne to its new proprietor Mr. J. S. Hines, who has bought this publication outright. The future aims of the new owner will be manifold.

It will not only be his earnest endeavor to continue to uphold the high standard of this: "The only Pacific Coast publication devoted entirely to shipping," but to greatly improve its volume and general appearance.

In this direction he desires to in particular emphasize that the columns of this publication are open to any just and fair discussion on all shipping matters of importance, legislative or otherwise, offer its space for such purpose and pledges its good will to all interested. The Pacific Marine Review is in the field to serve, support and further the shipping interests in general and of the Pacific in particular. It was called into existence for that purpose in the spirit of which it will earnestly continue and on an enlarged scale, providing the enlargement and general improvement meets with the just and necessary appreciation which such steps warrant.

A shipping paper naturally stands on its merits. The Pacific Marine Review is not in the field for charity, but for business interests on which it must rely for its future support.

We shall continue to the best of our ability, with such support as we solicit from all our present friends and those to come, to defend, support and further the interests of shipping on the Pacific in the coastwise and offshore trade.

THE DISCARDED SEAMEN'S BILL

As editorially prognosticated in our February issue the Senate committee on commerce has reported the Seamen's bill out with most radical amendments and "John Havelock Wilson and Company" have to seriously guess again! Rigid provision which is made against threats or force to prevent any person from taking employment on board of vessels must have come somewhat unexpected to the above mentioned corporation.

Reasonable improvements are made in forecastle conditions and advances of wages are abolished.

The committee expects to pass the bill as amended, but prospects of agreement in conference are doubtful.

Will the defenders of this vicious bill now appreciate the good they are having?

OUR NEW PRESIDENT

What a remarkable event! We have witnessed a change in the national administration of our country which seemingly has not arrested a single wheel in our great industrial system and by all appearance will not in any way hinder our future activities and prosperity.

It is a good omen in this epoch-making period of constant fluxion where new forces of civilization give steadfast rise to new conditions and large problems. The application of progressive remedies has long since become imperative to meet and conscientiously solve the resulting situation.

President Woodrow Wilson fully realizes the almost staggering load of responsibility thrust upon him, and we admire his courage and the spirit in which he has assumed such obligative duties.

Timid evasiveness and promises not kept in the past has made this great republic more or less the victim of circumstances wholly out of harmony with our traditions and policies. We now have reason to feel doubly assured of the dawn of a new era under most auspicious circumstances. In paying homage to our new President as a profound thinker, a teacher, economist, lawyer, historian and ardent student, in possession of courage, righteousness and energy, Mr. Wilson embodies, indeed, the finest qualities, bespeaking of true qualification for the highest office of this great country, the gift of the people of an expectant and admiring nation!

No one can possibly doubt President Wilson's sincerity and capacity for remarkable executive abilities in which the nation has such absolute faith.

The closing words of his inaugural address truly ring home and are particularly appealing to all adherers of true democratic principles:

"And yet it will be no cool process of mere science. The nation has been deeply stirred, stirred by a solemn passion, stirred by the knowledge of wrong, of ideals lost, of government too often debauched and made an instrument of evil. The feelings with which we face this new age of right and opportunity sweep across our heart-strings like some air out of God's own presence, where justice and mercy are reconciled and the judge and the brother are one. We know our task to be no mere task of politics, but a task which shall search us through and through, whether we be able to understand our time and the need of our people, whether we be indeed their spokesmen and interpreters, whether we have the pure heart to comprehend and the rectified will to choose our high course of action.

"This is not a day of triumph; it is a day of dedication. Here muster, not the forces of party, but the forces of humanity. Men's hearts wait upon us; men's lives hang in the balance; men's hopes call upon us to say what we will do. Who shall live up to the great trust? Who dares fail to try? I summon all honest men, all patriotic, all forward-looking men, to my side. God helping me, I will not fail them, if they will but counsel and sustain me."

WE MUST HAVE THE BEST

With the change in national administration, the Pacific Marine Review is particularly interested in the administrative bureaus pertaining to maritime affairs.

The rejuvenation of over-ripe executive boards, the pruning of dead branches and less sterile perception by new sages in possession of true sagacity, more applicable to time and condition, becomes a paramount issue.

Several of our contemporaries have been active since the November election and are still striving to if possible retain officials who during the past consecutive Republican administrations were comfortably seated in the government armchair due to the influence of political bosses and their associates.



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These officials weilded a sway, without timely exercising their power and sound judgment, and neglected to recommend and adjust rulings impartial to the shipping interests of the country at large.

We can but admire President Wilson's action in calling an extra session of Congress as a promising forerunner of a business administration. In private and corporate affairs of every important business undertaking, men of training and known capacity are selected for executive places and it may be truly expected that in this new era of progressive government administration, the system of favoritism and privilege, generally lacking in essential ability, will become of the past.

We need experts in the employ of the government on maritime matters—not politicians—experts upon whose experience, word and skill the United States government can absolutely rely to make just and fair recommendations, protecting the legal and moral rights of the travelling public and the maligned shipowner as well as those belonging to the seafaring fraternity. The pruning of barren branches is indeed imperative for a successful government. Blunders have been committed during the past administration, some of which are actually retroactive upon the already sadly handicapped Merchant Marine.

It is only due to the efforts of those who are sincerely interested in the welfare of shipping that such absurd rulings which lack foresight and true knowledge were finally amended. Some of these rules were called into force without due consideration to climatic conditions in a country of such immense area as ours and were to be enforced in particularly favored waters, which seek their equal in any part of the world.

We sincerely trust that many new appointments will be made and a superior type of men chosen for every particular sphere in these responsible positions. Men, who have acquired demonstrative ability and have proven their fitness and real genius, essential for such executive management, must be appointed and paid accordingly.

The old time tactics of political pull and the good will of those for whom one is expected to work during election as poll-worker is repulsive to every clean and honest citizen. Do not let it be said of this new administration that business alone wants able men and the government does not!

Learning, honor and integrity are alike necessary in those who are called upon to discharge these responsible duties for the government. The future reputation of the country in maritime affairs rests, in a very large measure, on those who are in charge of these respective offices and the guarantee of the peaceful enjoyment of progress, liberty and property must be sought in the character, ability and moral qualities of all government officials.

AN URGENT NECESSITY

The segregation of the various duties of our Steamboat Inspection Service to the better advantage of the inspectors and to the benefit of those who in point of law come under their jurisdiction is indeed an urgent necessity.

The need for the establishment of proper marine courts in charge of admiralty judges assisted by specially appointed nautical—and marine engineer—assessors (as the case may require) in the different supervising districts of the United States Steamboat Inspection Service, has been a long felt want

All local inspectors, supervising inspectors and the supervising inspector general, should be relieved of all authority to sit in judgment for suspension or revocation of any U. S. license of master, engineer or officer in case of accident to their respective charges caused by neglect or otherwise. The old time and still existing conditions

become more a matter of serious concern when one contemplates the power and great responsibility invested in steamboat inspectors. Many of these, it is well known, cannot be considered the peers of the increasing number of highly educated and up-to-date shipmasters and marine engineers, among whom none are infallible, but who are always in charge of the ever perfecting floating wonders of naval architecture.

Our Canadian neighbors have with due foresight improved these conditions and are continually bettering such vital matters by sane legislation proposed by their efficient Minister of Marine and Fisheries, endeavoring to do full justice to those particularly concerned.

Can the judgment of an engineer (inspector of boilers) be considered competent in either criticism or comment upon the action of a master in command of a vessel? Can a master mariner (inspector of hulls) be considered competent to render a decision for or against the action of an engineer in charge of the complicated machinery of a vessel? Decision in either of the above cases may result in the suspension or revocation of these respective licenses, or the license of any other officer on shipboard.

Both professions are entirely different from each other and no one man can possibly become efficient in both in the Merchant Service, and it is doubtful if this can be accomplished in the Naval Service. Each profession requires years of training, study and long experience in their particular spheres in order to become efficient in either. There respective acquired positions may be termed "in charge of on or below the deck of a steamship."

No one would choose to go to a lawyer to be treated for an illness nor to a doctor for legal advice. Then why should matters pertaining to nautical hearings be entrusted to the care of ex-engineers and marine engineering matters approved or vetoed by ex-navigators, as our laws now allow.

The seafarer feels the burden of oppression and injustice as much as those of other professions where the means of a livelihood is at stake. It is but fair to demand that the interpretation of the law should rest with a trained and judicial mind, and in marine matters assistance should be rendered by impartial experts in either profession so concerned.

Revise or amend our old worn out law system and accomplish what other maritime nations have long since had in just and successful operation. Let us bear in mind that the law which coerces the exaltation of a profession so essential to any country as that of the seafarer cannot be vindicated upon any principles of justice or reconciled to any rational theory of government.

REPORTS REGARDING NEW SHIPS FOR TOYO KISEN KAISHA ERRONEOUS

Quite recently several articles have appeared in the daily press regarding a proposed addition to the fleet of the Toyo Kisen Kaisha, which company operates a line of steamers from San Francisco to Japan, China, Manila and the Far East.

On inquiry at the San Francisco office of this company we are advised as follows:

"We beg to acknowledge receipt of your letter of February 3rd, re report that this company is to soon add two more vessels to its fleet, and in reply would advise that if any such advice has come to your attention it is erroneous, as it is not the intention of this company to increase its fleet of steamers. Of late various articles have appeared in the press to the effect that the Toyo Kisen Kaisha was to build or purchase two more steamers, but we are at a loss to understand on what these rumors are based as nothing of the kind is even under contemplation."



THE SEPARATION OF THE PACIFIC MAIL AND THE SAN FRANCISCO & PORTLAND S. S. CO.

As the result of the general unmerging of the Harriman properties, caused by the decision of the supreme court which has ordered the dissolution of the Union and Southern Pacific Railroad companies and allied concerns, these two large companies are now establishing themselves as separate units.

In the dissolution of the two immense corporations the Pacific Marine Review is particularly interested in the steamship owneries of these companies. The Pacific Mail Steamship Company and the San Francisco-Portland Steamship Company have heretofore been under the capable management of Mr. R. P. Schwerin as vice-president and general manager. The Southern Pacific will retain its control of the Pacific Mail but the San Francisco-Portland Steamship Company is transferred under the supervision of the Oregon-Washington Railroad & Navigation Company, of which Mr. J. D. Farrell is president. Mr. Farrell is well known as the former president of the Pacific Coast Steamship Co., and later of the Great Northern Steamship Company. In connection with the above changes President J. D. Farrell announced the following appointments: G. L. Blair, general manager, headquarters in San Francisco; H. W. Deans, assistant to the general manager, with headquarters in San Francisco: R. L. Blaisdell, uditor. headquarters in Portland, Or.; R. L. Barnes, treasurer, with headquarters in San Francisco; R. L. Blaisdell, auditor, mechanic, with headquarters in Portland, Ore.

SAILINGS FOR ROYAL MAIL STEAM PACKET COM-PANY'S PACIFIC SERVICE ANNOUNCED

Messrs. Frank Waterhouse & Co., Inc., agents for the above company, announce the following sailings from Europe for this coast:

S. S. "Falls of Orchy," March 14; "Monmouthshire," May 9; "Den of Ruthven," June 6; "Glenlogan," July 4; "Den of Crombie," August 1; "Den of Glamis," August 29; "Steamer," September 26; "Glenstrae," October 24.

The "Falls of Orchy" is due to arrive in Seattle on June 12 and the "Monmouthshire" on August 12.

The above named steamers will be dispatched from Seattle to Europe in the order shown, via Yokohama, Kobe, Moji, Shanghai, Hongkong, Manila, Singapore, Suez, Port Said, London, Antwerp and Rotterdam, from which it will be noted a regular monthly service from September 1 of first class steamers owned by one of the largest water transportation companies in the world is being offered.

The Royal Mail Steam Packet Co. will be represented in this service by The English Coaling Co., Ltd., at Port Said and Suez; Messrs. Skrine & Co., at Colombo; Messrs. Boustead & Co., at Penang and Singapore; Boustead, Hampshire & Co., at Port Swettenham; Jardine, Matheson & Co., Ltd., at Hongkong and Shanghai; Sale & Frazar, at Kobe and Yokohama; Macleod & Co., at Manila; Sale & Frazar, at Moji.

Complete schedules will be prepared as quickly as possible, and information concerning same published in an early issue of the Pacific Marine Review.

S. S. "AJAX" TO BE ADDED TO PUGET SOUND-HONG-KONG SERVICE OF BLUE FUNNEL LINE

Messrs. Alfred Holt & Co., owners of the Blue Funnel Line, have arranged for the addition of an extra steamer to sail from Puget Sound in July. The S. S. "Ajax" will arrive on Puget Sound June 27th, and will sail for Japan, Shanghai and Hongkong on July 12th. It is probable that this steamer will be regularly employed between Hongkong and Puget Sound, instead of proceeding through to Europe as do the present four weekly departures.

The S. S. "Ajax" is 7,040 gross, 4,478 net, length 442 ft., breadth 52 ft. 8 in., depth 32 ft. 1 in., with a cargo capacity of 11,500 tons of 40 c. f. This steamer loaded on Puget Sound in 1906, since which she has been regularly employed in the Blue Funnel Line between Europe and China.

Mr. A. F. Haines, the general freight agent of Dodwell & Co., Ltd., Pacific Coast agents for the Blue Funnel Line, states that "it is a commentary upon the increase of trans-Pacific trade to find regular lines adding tonnage in the summer months. In years gone by, it has been an impossibility to find cargo to fill all of the liners. The year 1912 was the first time that steamers were not obliged to go away with vacant space during summer months, but the increase in cargo now appears to more than keep pace with the increase in tonnage. We feel sure that notwithstanding the additional sailings of the regular lines, and the coming of new lines, there will be ample cargo for all."

FREIGHTS AND FIXTURES

The special monthly freight report prepared by Messrs. Hind-Rolph & Co. of San Francisco for the Pacific Marine Review is published herewith:

During the past month there have been no material changes in freight rates from this coast. The markets have not shown any great activity, but, at the same time, any business done has been quite up to past figures.

Perhaps the most interesting feature has been the strong efforts being made by the railroads to charter tonnage for cotton to the Orient, and although they have tried out the market very thoroughly, in all directions, their efforts have not met with much success. We might also mention with regard to the fixture of the S. S. "Algoa," of which details are given below, that although the rate seems low, in reality it is fully equal to the rates paid to other tonnage.

The most interesting fixtures to report are as follows:

Steamers.

- "HARPAGUS"—Time charter, delivery and redelivery, Puget Sound for a round trip to the Orient, 6/9.
- "IKALIS"—Time charter, delivery San Francisco, redelivery Japan, 10/-.
- "ALGOA"—Time charter, delivery San Francisco, redelivery Sydney or Newcastle, 6/9.
- "HAWKHEAD"—Time charter, delivery San Francisco, redelivery Sydney or Newcastle, 8/-.

Sailers.

- "BAY OF BISCAY"—Lumber direct, port U. K., 83/9.
- "REINBEK"—Lumber direct, port U. K., 81/3.
 Option 2 ports, 83/9.
- "GENERAL DE NEGRIER"—Lumber direct, Nitrate port. 61/3.
- "W. H. TALBOT"—Lumber New Zealand, 65/-.
 Option West Coast, 65/-.
- "GENEVA"-Lumber New Zealand, 67/6.
 - Option Sydney or Newcastle, 65/-.
- "OLONA"—Portland, U. K. Cont., 33/9, wheat. 35/-, barley.

Queen Charlotte Islands.—Hecate Strait, Skidegate Inlet, eastward of Deadtree Point. Can buoy to be replaced by gas buoy. Former notice—No. 37 (96) of 1912. Position—1.55 miles 130 deg. (S. 77 deg. E. Mag.) from Deadtree Point. Lat. N. 53 deg. 20 min. 37 sec., long. W. 131 deg. 53 min. 30 sec. Alteration—The black can buoy heretofore maintained will be replaced, without further notice, by a gas buoy. Description—Steel cylindrical buoy, surmounted by a pyramidal steel frame supporting the lantern. Color—Black. Character of light—Occulting white.



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REVIEW AND OUTLOOK FOR THE LUMBER BUSINESS

In the fall of 1906 and the spring and summer of 1907 the lumber industry of the Pacific Northwest and generally of the whole country enjoyed what was unquestionably a boom. Unfortunately, however, there were those who, at the time, considered the conditions normal and the prospects good for a continuance of the general prosperity. Acting accordingly, many of those who owned timber hastened to erect saw mills and many others bought timber and built mills. Wherever an idle mill could be found it was put in operation. This brought an increased demand for labor and wages soared in proportion.

That period and all conditions affecting the local lumber industry were not, however, normal. On the contrary many things happened and they all happened at approximately the same time to make an unusual demand for lumber. Just how soon this demand would have sought its true level by a gradual decline will never be known, for at almost the zenith of this boom came the first rumblings of the threatening storm. The warning, however, was all too short and almost overnight lumbermen found themselves in the middle of the now famous panic of 1907, which, as will be remembered, came in the fall of that year.

Almost as a unit the mills closed. The labor market was immediately flooded and the wage earner could get little more than half his former wage and was forced to accept clearing house checks for much of that.

But what the laborer suffered was small in proportion to that of the operator who had rushed into the business on borrowed capital. He was suddenly confronted with no income to meet his heavy carrying charges. The result was inevitable. One receivership followed another.

Contrary to the generally accepted theory that one mill going into bankruptcy helps indirectly all the survivors, by eliminating that much competition, the situation did not improve. This for the reason of the fact that when a saw mill company fails a new company or the reorganized old company sooner or later resumes operations in the same plant at that much reduced overhead. In the case of a new company they have unquestionably purchased the property at much less than its original or real value and have that much less interest on investment to figure, all of which makes for reduced cost of manufacture and so keener competition. Another point that is too often overlooked is that most of such competition, in the case of new companies, is unintelligible. The new company always has much to learn and the lessons are acquired by experience at a cost which the whole industry must indirectly bear.

The above is set forth to show briefly the struggle through which the lumber industry of the Pacific Northwest has been fighting for the last five or six years. During the periods in these years when the demand was normal the supply was out of all proportion. Instead of a supply for a normal year meeting a demand for a normal year it has been from that time a supply for a boom year thrust on a normal demand.

Students of the subject foresaw but one remedy, and that the gradual readjustment of the two guiding factors, supply and demand, by a slow, steady growth of the latter to meet the practically even scale of the former. Artificial manipulations of either were as much out of the question from a practical as a legal standpoint.

During this reconstruction period the operator has been pushed to the limit of his financial strength and resources. An occasional flurry would give him a little margin of profit that would only be consumed in the next lull. Two lines, the one representing selling averages and the other total costs of the finished product, drawn across a page divided vertically into months for the last five years would show

a rise and fall of the former crossing the line of costs, now above and now below.

And so we are brought to the present day, with the rift in the clouds just beginning to show a little more of light. It is safe to say that lumbermen have a truer feeling of optimism than has been the case since 1907. That feeling is based on what appears to be a solid foundation.

Some of the prevailing reasons are these:

Stocks locally and throughout the country are low, much less than they were at the beginning of 1912.

The capacity of the mills cutting yellow pine, our greatest competitor, is gradually being reduced as the timber is cut out. Yellow pine reached its maximum cut in 1910. The normal demand that cannot be supplied in the south will come to the coast.

The Panama-Pacific Exposition will consume a great quantity of lumber.

The last year's crops were good, the effect of which has and will be felt.

The railroads are again buying lumber to complete longdelayed construction and replenish depleted rolling stock.

The Panama Canal offers hope for trade on the east coast of the United States and the northern part of South America, which we have never enjoyed on account of prohibitive freight rates.

Coast lumber is gradually becoming more widely known throughout the world as time proves its efficiency.

While substitutes have made their inroads, lumber in its turn is proving its value as a substitute for other materials, as in the case of the wooden paving blocks.

Many lumbermen comparatively new in the business are fast becoming educated. Merchandising is beginning to be recognized as an essential branch of the manufacturing business.

Better times for the lumber business on this coast mean better times for all business, as about every dollar earned is new money brought into this territory from the outside world to be scattered through the channels of trade. Cutting of timber is not necessarily depleting our natural resources. On the other hand the lack of cutting may be the veriest waste. For every thousand feet of timber cut and manufactured about \$8.00 goes to the laboring man and thence to every known branch of business. Washington in 1911 cut 4,064,754,000 feet b. m. of lumber, 2,971,110,000 pieces of lath and 12,113,867,000 shingles. at \$8.00 per thousand board feet—this means in round numbers \$45,000,000.

NEW STEAMERS PURCHASED BY NIPPON YUSEN KAISHA

The secretary of the Nippon Yusen Kaisha advises us that this company has purchased in Europe three new steamers of about 6,000 tons each, which they contemplate employing in their India services. Five steamers of over 10,000 tons each are now under construction for this company in Japan. They will be placed on the European service, replacing the 6,000-ton steamers running at present.

As to the increase of the services of the N. Y. K., mention may be made of the fortnightly service between Yokohama and Calcutta, which was opened with six steamers sometime ago. The Nippon Yusen Kaisha is looking forward with much interest to the opening of the Panama Canal, but there being nothing defipite decided about the extention of their Pacific service, no information is at this time available concerning their plans in this connection.



The serious disturbance in Mexico has had a depressing effect upon affairs in the United States but there is no indication that this government will find it necessary to intervene. As yet no real leader has arisen in Mexico to whom the people can turn with assurance, although the situation may develop one, but it is a problem that

the people of Mexico must solve for themselves, even if it takes a long time to do so.

Large mercantile concerns continue to do a good volume of business, and, in spite of disturbance in the stock market, general trade keeps up well. A number of the largest railroad systems are still placing orders for new equipment, and it is apparent that many of the steel plants have booked sufficient orders to keep their equipment fully employed for several months to come. The volume of new orders has been falling off, however, in some industries, which slowing down has evidently been caused by uncertainty as to what conditions would follow a revision of the tariff. When that question has been settled it is believed that an immense volume of business, withheld temporarily pending definite information, will be released.

The official returns just given out at Washington show that merchandise exports from the United States in January reached the largest volume ever reported in that month, namely, \$227,020,645. The previous January record was \$206,114,000, made in 1908. Imports also reached an unprecedented figure, showing \$162,678,000 against a previous record of \$143,586,000, in January a year ago. What is, however, much more to the point is the fact that for the seven completed months of the fiscal year ending January 31 last, the balance of exported merchandise was \$430,500,000, a figure which has been exceeded only twice. These figures furnish proof of our underlying strength and indicate that our foreign credit balance from merchandise exports is now very close to the record for the period.

This condition becomes more striking when it is re-

membered that instead of receiving foreign gold in payment of these excess credits, we have been engaged in exporting it, the total outflow of gold from the beginning of the year to the third week of February being \$28,200,000, which constitutes a record for that period. There can be no doubt, therefore, that our foreign trade is in a satisfactory condition and will be of enormous advantage to us later on should real stringency develop in the money market here.

For several weeks Europe has been engaged in financing its purchases of Argentine wheat—which for the first eight weeks of the year amounted to 25,000,000 bushels, against 8,000,000 bushels in the same weeks of 1912—through the shipment of gold coin from New York to Buenos Ayres. This movement is likely to keep up for some time unless a sufficient demand for money here should advance discount rates considerably above the prevailing quotations.

'The dispute between the railroad firemen and enginemen, on the one hand, and the managers of the Eastern trunk lines, on the other, over the question of increased wages, will be arbitrated under the provisions of the Erdman law. This will virtually put the burden of the decision upon one man, since the representatives of the two opposing interests will view the subject from their own standpoint, so that the third man, to be selected by the other two, will assume an immense responsibility. The situation is a trying one for the railroads, because of the fact that other classes of railroad labor will ask for wage increases if the claims of the firemen and enginemen are allowed. The questions at issue are of vital importance to the whole country, and it is to be hoped that for the good of all concerned they may be considered in a broad minded and statesmanlike way. If the firemen are granted increased pay, as the locomotive engineers were, it seems inevitable that the roads must before long secure some advance in freight rates in order to compensate them for their constantly increasing expenses.-Fourth National Bank of the City of New York.

FREE-SHIP LAW

From the Last Annual Report of the Hon. E. T. Chamberlain, Commissioner of Mavigation to the Secretary of the Mavy.

From the last Annual Report of the Hon. E. T. Chamberlain, Commissioner of Navigation to the Secretary of the Navy.

The fifth section of the Panama Canal act of August 24, 1912, provides for the admission of foreign-built ships, not over five years old, to American registry for the purpose of engaging in the foreign trade. The section has not been in force long enough to determine its results. Many inquiries concerning its details have been made, but thus far no applications for the registry of foreignbuilt ships have been filed. None were expected at the outset. The laws require that all the watch officers of vessels of the United States shall be citizens. The transfer of a foreign ship to American registry under the new law, accordingly, will involve in nearly every case a complete change in the personnel of the deck and engine-room management. Such changes are not made hurriedly by prudent shipowners. A decent regard for alien officers who may have served for years with skill, courage, and fidelity would forbid their discharge until they had found opportunities for other employment. Again, the selection of their American successors could not be effected without inquiry, as the number of American deck officers who within recent years have brought American steamships into foreign ports, except those in our vicinity, is not large. The change of flag, accordingly, is a matter requiring time in the case of vessels now affoat. The limitation of the act to vessels not over five years old was, of course, designed to bring modern vessels into the American merchant fleet, and to exclude old steamers which foreign shipowners are always willing to sell in order to secure vessels of improved types and greater efficiency.

Whether the act shall result in considerable or in slight additions to American tonnage in foreign trade, it will be directly beneficial in that it will clarify discussion of the maritime policy of the United States. For years it has been contended, on the one hand, that the main reason why American shipping in foreign trade has declined from year to year or has at times shown only an inconsiderable increase, was the prohibition of American registry to vessels built abroad. On the other hand, it has been contended that the repeal of this prohibition, which dates back to December 31, 1792, would close our shipyards on the seaboard and throw thousands of men out of employment. From time to time it has been suggested in these reports that neither of these views expressed the facts of the situation and that the registry law served only to obscure an understanding of the real difficulties in the way of the development of our foreign carrying trade under the flag and to substitute unthinking allegiance to theory for the work of patient investigation into facts. It will be found at the end of the current fiscal year that our shipyards have been busier than for years past and that vessels are being launched at home for the foreign trade. It is also probable that some of the American capital which within the past 20 years has been invested in ships under foreign flags will effect the transfer of those ships to the American flag, and thus increase the opportunities for the employment of American deck officers and engineers. General conditions, however, are not likely in the immediate future to change greatly from those outlined in this report for 1909.

American capital is not predisposed toward the sea at present. Much less is American labor so predisposed. With a vast amount of productive land, permitting almost any industrious man who wishes it to own his own home and raise a family, the United States stands in a different relation to the ocean than do England, Norway, Italy, Japan, or even Germany. The surplus population of those countries must emigrate or follow the sea. Low as are the wages of German sailors, they compare not unfavorably with wages in German factories. In all branches of ocean transportation where one terminal is at a foreign center of sea labor, such as Liverpool, Antwerp, Genoa, Marseille, or Hongkong, a steamship under the American flag is not at an insuperable disadvantage compared with the same ship under a foreign flag, because under either flag the ship can draw its crew from the same labor market. But in trade to South America, for example, where there is no native seafaring population, the conditions are different. The American ship out of New York for Rio de Janeiro must pay New York wages, while the British ship from Liverpool, the German ship from Hamburg, and the Italian ship from Genoa pay the wages of those ports. Those wages to a very great extent are governed by the general rates of wages of the country, and those general rates in turn are the product of many factors, of which legislation is not usually the principal.

Free Materials for Shipbuilding

The same section of the Panama Canal act was framed to carry to completion the policy of free materials for American shipbuilding instituted in the tariff act of 1871 and steadily advanced by the tariff acts of the past 40 years. So far as structural steel, the principal material of modern shipbuilding, is concerned, considerable imports are not likely at present, for steel ship plates were selling at Pittsburgh in August at \$30.24 per ton, while the quotations in England for the same date were \$38.93. The difference in price, of course, must not be considered in any final analysis without regard to ocean freights and relative prompitude of delivery. The provisions of the Panama Canal act relating to the free admission of materials for American shipbuilding are administered by the treasury department.

Coasting Trade

The shipping legislation incorporated in section 5 of the Panama Canal act of August 24, 1912, was designed to give to American shipping in the foreign trade and American shipbuilding the same freedom in the choice of ships and ships' materials as are enjoyed by British shipowners and shipbuilders with these exceptions:

(a) The watch officers of American ships must be citizens of the United States, while no national qualifications is required of the officers of British ships.

The American shipowner can not buy a foreign-built ship and secure for it an American register if it is over 5 years old and unless its seaworthiness is rated at the equivalent of Lloyds 100A. The British shipowner can buy a ship built elsewhere than in Great Britain, regardless of age or seaworthiness. In fact, however, little use is made of this privilege, but, on the contrary, it is the

custom of British shipowners to dispose of their old ships to the subjects of the lesser maritime nations.

(c) The coasting trade of the United States is reserved to our national vessels, as most maritime nations reserve that trade to their own vessels, respectively, and vessels for our coasting trade must be built in the United States. The coasting trade of the United Kingdom is open to vessels of all nations. A glance at the globe will show the relative importance of the coasting trades of the United States and of the United Kingdom.

The rules which govern the foreign trade and those which govern the coasting trade both here and abroad are totally different. Nearly a century ago the principle of maritime reciprocity was adopted by the United States in its foreign trade, and recognition of that principle is now the basis of the laws which govern communications by sea between nations. That recognition rests on the patent fact that international trade is a bargain in which no one nation can assume successfully to dictate all the terms. Each nation by guaranteeing to the ships of foreign nations in its foreign trade equal privileges with those enjoyed by its own ships has secured from foreign nations corresponding privileges for its own ships abroad. The declaration of this policy of freedom of navigation in foreign trade, as opposed to the restrictive policy of the navigation acts of Cromwell, was one of the early and substantial benefits which the fathers of the Republic bestowed upon mankind.

The regulation of the coasting trade between our own ports involves entirely different considerations. That trade is wholly within national jurisdiction, and its regulation is solely a matter of domestic policy. For reasons generally well understood, the United States has not for some years built any considerable number of ocean steamers for the foreign trade. The shipbuilding industry on the seaboard of the United States owes its present existence to the country's great expenditures in recent years for building war vessels and to the demands of the coasting trade for steel steamers. The rapid increase in the size and cost of battleships is reducing, of course, the number of shipbuilding establishments which can devote themselves to this form of construction and tends to restrict shipbuilding to a few plants. Yet the industry of shipbuilding stands on a higher plane than any other form of manufacture, because from the beginning of government it has been regarded as essential to the national With the opening of the Panama Canal the United States will have a seaboard and a coasting trade so extended that it is difficult to conceive the combination of political changes which could give to any other nation its equal. The continued reservation of this trade to American-built vessels will secure the maintenance in the United States of a shipbuilding industry not likely to be exceeded except by that of Great Britain. The tonnage of the United States documented for the coasting trade, including the Great Lakes, now comprises 6,782,082 gross tons, while the total tonnage of the German Empire is 4,711,998 gross tons.

It is quite possible that through the interlocking management of railroad and water transportation companies in some instances and through control of terminal facilities in other cases the coastwise trade of the United States has not attained its normal development. The eleventh section of the Panama Canal act rests on this belief. The committee on the Merchant Marine and Fisheries of the House is conducting a thorough inquiry to ascertain the situation, and its investigation will doubtless lead to appropriate legislation. The effect of such legislation can not fail to increase the opportunities for the coasting trade of the United States, and in so doing to stimulate the shipbuilding industry in accord with traditional

policy. Twelve ocean steamships, averaging about 6,500 gross tons each, are now building in the United States specifically for the Panama Canal trade, and some of the smaller ocean steamships under construction will doubtless make use of the canal from time to time, even if not wholly employed between Atlantic and Pacific coast ports. All the economies in water transportation associated with large steamers will apply particularly to canal navigation. At the same time the trade between our smaller ports on the two oceans and the gulf will require from time to time smaller steamers not employed on regular lines, and will thus help to establish that specialization in shipbuilding, hitherto impossible in our shipyards, which has been one of the reasons for relatively cheaper shipbuilding in Great Britain.

Ocean Mail Contracts

The fifth section of the Panama Canal act of August 24, 1912, also contains an important amendment to the ocean mail act of 1891. The act of 1891 was limited to American-built steamships or steamships registered by law. Only two foreign-built steamships, however, were registered for the purpose by special act of Congress. Panama act provides for the admission generally of foreign-built vessels less than five years old, and provides further that such vessels so admitted may contract with the postmaster general under the act of 1891 "so long as such vessels shall in all respects comply with the provisions and requirements" of the act of 1891. So far as construction is involved the essential requirements of the act of 1891 are that contract mail steamers of 14 knots or over shall be built according to plans approved by the secretary of the navy. The rates of ocean mail pay or subsidy prescribed in the act of 1891, \$4 per mile for 20knot ships, \$2 per mile for 16-knot ships, and \$1 per mile for 14-knot ships were fixed with reference to the greater cost of building such steamships in the United States than in Great Britain, as well as with reference to the relative cost of operation. The Panama Canal act eliminates the difference in cost of building, and to that extent very materially amends the act of 1891. From the point of view of American navigation the amendment should be noted, but the administration of the law rests with the postmaster general and the secretary of the navy.

THE PANAMA CANAL

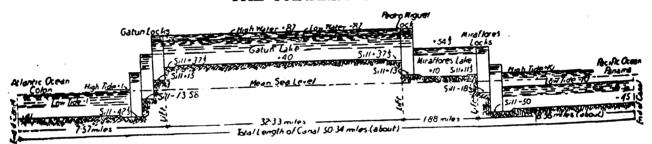


Diagram Showing Lake Elevation

The Isthmian Canal Commission has just issued the "Official Handbook of the Panama Canal," which has been compiled by its secretary, and which contains such succinct information in connection with the construction and proposed operation of the canal that those reading its contents will have a very good idea indeed of the principal phases of the engineering marvel successfully accomplished by the American nation.

This "Official Handbook of the Panama Canal" will be reproduced in the Pacific Marine Review's different monthly issues, the first installment appearing herewith.-Ed. Note.

The Panama Canal does not, as is quite generally thought, cross the Isthmus from east to west. As is shown on the accompanying map, its general direction is from northwest to southeast, the Pacific entrance near Panama being about 221/2 miles east of the Atlantic entrance near Colon. It is a lake canal as well as a lock canal, its dominating feature being Gatun Lake, a great body of water covering about 164 square miles and occupying the northern half of that portion of the Isthmus through which the Canal passes. This lake is an elevated body of water with a surface level maintained at from 85 to 87 feet above sea level by the Gatun Dam and locks on the Atlantic side and the Pedro Miguel Locks and Dam on the Pacific side. (Plate B.) The Culebra Cut is really an arm of the lake. On both Atlantic and Pacific sides there is an approach channel, which is an inlet of the sea, extending from deep water in the sea up to the foot of the locks which lift vessels to the level of the lake through which they are to pass.

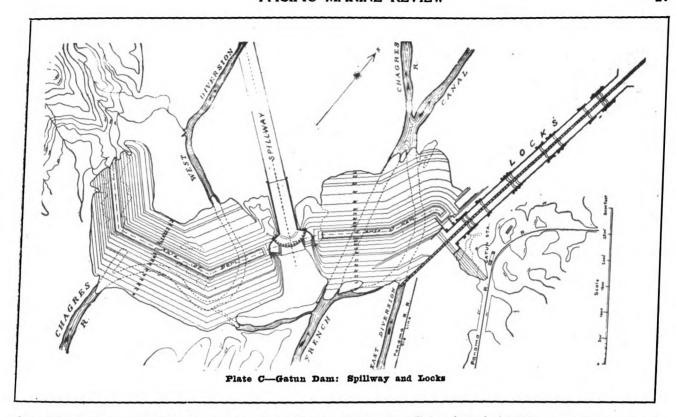
The entire length of the Canal from deep water in the Atlantic to deep water in the Pacific is about 50

miles. Its length from shore-line to shore-line is about 40 miles. In passing through it from the Atlantic to the Pacific, a vessel will enter the approach channel in Limon Bay, which has a bottom width of 500 feet and extends to Gatun, a distance of about 7 miles. At Gatun it will enter a series of three locks in flight and be lifted 85 feet to the level of Gatun Lake. It may steam at full speed through this lake, in a channel varying from 1,000 to 500 feet in width, for a distance of about 24 miles, to Bas Obispo, where it will enter the Culebra Cut. It will pass through the cut, a distance of about 9 miles, in a channel with a bottom width of 300 feet, to Pedro Miguel. There it will enter a lock and be lowered 30 1-3 feet to a small lake, at an elevation of 54 2-3 feet above sealevel, and will pass through this for about 1½ miles to Miraflores. There it will enter two locks in series and be lowered to sea level, passing out into the Pacific throu, a channel about $8\frac{1}{2}$ miles in length, with a bottom width of 500 feet. The depth of the approach channel on the Atlantic side, where the maximum tidal oscillation is 2½ feet, will be 41 feet at mean tide, and on the Pacific side, where the maximum oscillation is 21 feet, the depth will be 45 feet at mean tide. The mean sealevel in both oceans is the same.

Throughout the first 15 miles from Gatun, the width of the lake channel will be 1,000 feet; then for 4 miles it will be 800 feet, and for 4 miles more, to the northern entrance of Culebra Cut at Bas Obispo, it will be 500 feet. The depth will vary from 85 to 45 feet. The water level in the cut will be that of the lake, the depth 45 feet.

Three hundred feet is the minimum bottom width of the canal. This width begins about half a mile above Pedro Miguel locks and extends about 8 miles through Culebra Cut, with the exception that at all angles the





channel is widened sufficiently to allow a thousand-foot vessel to make the turn. The cut has eight angles, or The 300-foot widths are only about one to every mile. on tangents between the turning basins at the angles. The smallest of these angles is 7° 36', and the largest 30°.

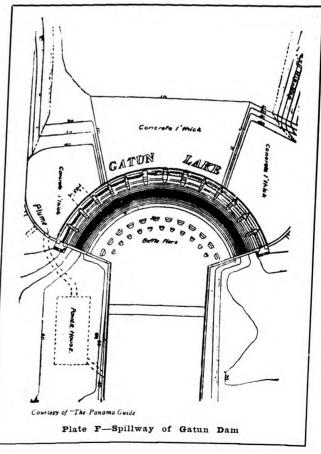
In the whole canal there are 22 angles, the total curvature being 600° 51'. Of this curvature, 281° 10' are measured to the right, going south, and 319° 41' to the left. The sharpest curve occurs at Tabernilla, and is 67° 10'.

The Gatun Dam, which forms Gatun Lake by impounding the waters of the Chagres and its tributaries, is nearly $1\frac{1}{2}$ miles long, measured on its crest, nearly $\frac{1}{2}$ mile wide at its base, about 400 feet wide at the water surface, about 100 feet wide at the top, and its crest will be finished at an elevation of 105 feet above mean sealevel, or 20 feet above the normal level of the lake. It is in reality a low ridge uniting the high hills on either side of the lower end of the Chagres Valley so as to convert the valley into a huge reservoir. Of the total length of the dam only 500 feet, or one-fifteenth, will be exposed to the maximum water head of 85 to 87 feet. The interior of the dam is formed of a natural mixture of sand and clay, dredged by hydraulic process from pits above and below the dam, and placed between two large masses of rock and miscellaneous material obtained from steam shovel excavation at various points along the canal. The top and upstream slope will be thoroughly riprapped. The entire dam will contain about 21,000,000 cubic yards of material. (Plate C.)

Spillway, Gatun Dam.

The Spillway is a concrete lined channel 1,200 feet long and 285 feet wide cut through a hill of rock nearly in the center of the dam, the bottom being 10 feet above sealevel at the upstream end and sloping to sealevel at the toe. Across the upstream or lake opening of this channel a concrete dam has been built in the form of an arc of a circle making its length 808 feet although it closes a channel with a width of only 285 feet. The crest of the dam will be 69 feet above sealevel, or 16 feet below the normal level of the lake which is 85 feet above sealevel. On the tops 115.5 feet above sealevel and between these there will be mounted regulating gates of the Stoney type.

Each gate will be of steel sheathing on a framework of girders and will move up and down on roller trains in niches in the piers. They will be equipped with sealing devices to make them water-tight. Machines for moving the gates are designed to raise or lower them in approximately ten minutes. The highest level to which it is intended to allow the lake to rise is 87 feet above sealevel. and it is probable that this level will be maintained con-



tinuously during wet seasons. With the lake at that elevation, the regulation gates will permit of a discharge of water greater than the maximum known discharge of the Chagres River during a flood. (Plate F.)

Hydroelectric Station at Gatun.

Adjacent to the north wall of the spillway will be located a hydroelectric station capable of generating through turbines 6,000 kilowatts for the operation of the lock machinery, machine shops, dry dock, coal handling plant, batteries, and for the lighting of the locks and Zone towns and, if desirable, the Panama railroad. The building will be constructed of concrete and steel, and will be of a design suitable for a permanent power house in a tropical country. The dimensions will be such as to permit the installation of three 2,00 att units, and provision will be made for a future extension of three additional similar units. It will be rectangular in shape, and will contain one main operating floor, with a turbine pit and two galleries for electrical equipment. The building, with the machinery and electrical equipment, will be laid out upon

the unit principle, each unit consisting of an individual head gate, penstock, governor, exciter, oil-switch, and control panel.

Water is to be taken from Gatun Lake, the elevation of which will vary with the seasons from 80 to 87 feet above sealevel, through a forebay which will be constructed as an integral part of the curved portion of the north spillway approach wall. From the forebay the water will be carried to the turbines through three steel plate penstocks, each having an average length of 350 feet. The entrances will be closed by cast iron headgates and bar iron trash racks. The headgates will be raised and lowered by individual motors which will be geared to rising stems at tached to the gate castings. The driving machinery and the motors will be housed in a small concrete gatehouse erected upon the forebay wall directly over the gate recesses and trash racks. The gatehouse will be constructed for the present requirements of three headgates, and provision will be made for a future addition of three more units. (Plate G.)

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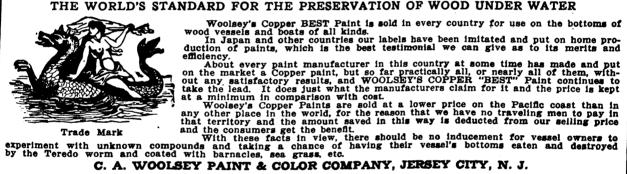
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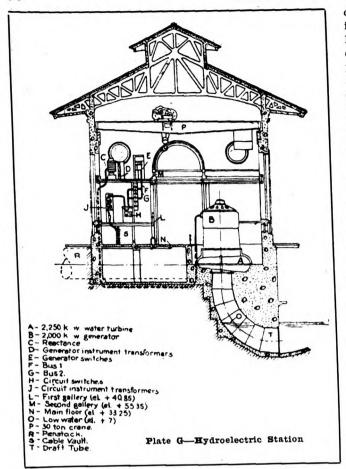
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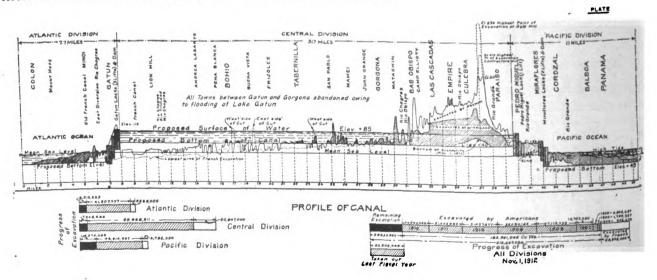
Water Supply of Gatun Lake.

Gatun Lake will impound the waters of a basin comprising 1,320 square miles. (See map.) When the surface of the water is at 85 feet above sealevel, the lake will have an area of about 164 square miles, and will contain about 183 billion cubic feet of water. During eight or nine months of the year, the lake will be kept constantly full by the prevailing rains, and consequently a surplus will need to be stored for only three or four months of the dry season. The smallest run-off of water in the basin during the past 22 years, as measured at Gatun, was that of the fiscal year, 1912, which was about 132 billion cubic feet. Previous to that year the smallest run-off of record was 146 billion cubic feet. In 1910 the run-off was 360 billion cubic feet, or a sufficient quantity to fill the lake one and a half times. The low record of 1912 is of interest as showing the effect which a similar dry season,

occurring after the opening of the canal, would have upon its capacity for navigation. Assuming that the Gatun Lake was at elevation plus 87 at the beginning of the dry season on December 1st, and that the hydroelectric plant at the Gatun Spillway was in continuous operation. and that 48 lockages a day were being made, the elevation of the lake would be reduced to its lowest point, plus 79.5. on May 7th, at the close of the dry season, after which it would continuously rise. With the water at plus 79 in Gatun Lake there would be 39 feet of water in Culebra Cut, which would be ample for navigation. The water surface of the lake will be maintained during the rainy season at 87 feet above sealevel, making the minimum channel depth in the canal 47 feet. As navigation can be carried on with about 39 feet of water, there will be stored for the dry season surplus over 7 feet of water. Making due allowance for evaporation, seepage, leakage at the gates, and power consumption, this would be ample for 41 passages daily through the locks, using them at full length, or about 58 lockages a day when partial length is used, as would be usually the case, and when cross filling from one lock to the other through the central wall is employed. This would be a larger number of lockages than would be possible in a single day. The average number of lockages through the Sault Ste. Marie Canal on the American side was 39 per ay in the season of navigation of 1910, which was about eight months long. The average number of ships passed was about 11/2 per lockage. The freight carried was about 26,000,000 tons. The Suez Canal passed about 12 vessels per day, with a total tonnage for the same year of 16,582,000.

The water level of Gatun Lake, extending through the Culebra Cut, will be maintained at the south end by an earth dam connecting the locks at Pedro Miguel with the high ground to the westward, about 1,400 feet long, with its crest at an elevation of 105 feet above mean tide. A concrete core wall, containing about 700 cubic yards, will connect the locks with the hills to the eastward; this core wall will rest directly on the rock surface and is designed to prevent percolation through the earth, the surface of which is above the lake level.

A small lake between the locks at Pedro Miguel and Miraflores will be formed by dams connecting the walls of Miraflores locks with the high ground on either side. The dam to the westward will be of earth, about 2,700 feet long, having its crest about 15 feet above the water in Miraflores Lake. The east dam will be of concrete, containing about 75,000 cubic yards; will be about 500 feet long, and will form a spillway for Milaflores Lake; with crest gates similar to those at the Spillway of the Gatun Dam.



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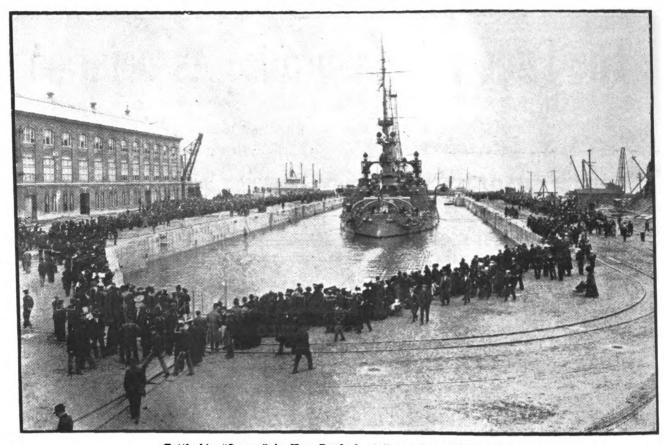
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Battleship "Oregon" in New Drydock at Puget Sound Navy Yard Photo by F. H. Nowell, Seattle

LARGEST DRYDOCK IN THE UNITED STATES NOW COMPLETED AT PUGET SOUND NAVY YARD

The Puget Sound Navy Yard has all reason to be proud of its new possession, the largest drydock in the United States, representing an expenditure of two million, three hundred thousand dollars and much skill and energy on the part of its builders, the Erickson Construction Company, of Seattle.

The above illustrates the battleship "Oregon" in the dock, and it is interesting to note that with only two of the four pumps in use, the dock, with water to the depth of forty-two feet, was emptied in two and one-fourth hours. When all of the four pumps are available the water can be pumped out in about an hour and a half.

As Rear Admiral V. L. Cottman, U. S. Navy, Commandant at the Yard, wrote us some time ago, Drydock No. 2 of the Bremerton Navy Yard is the largest drydock in the United States Navy, its clear dimensions for docking purposes being 800 feet of length, 110 of width and 35 of depth at mean high water. The total depth from bottom to coping is 47 feet. A disabled battleship drawing 40 feet could come from sea and enter this dock.

The three great docks at New York, at Pearl Harbor and at Puget Sound are of dimensions sufficient to take any ship which can pass through the locks of the Panama Canal, excepting only for length. They will dock any war vessel afloat or any likely to be built for many years to come; and they will dock any commercial ships afloat, with the exception of the latest trans-Atlantic liners. The New York and Pearl Harbor docks are respectively 680 and 780 feet long, and their depths are 33 and 32 feet. The Pearl Harbor dock is lined with concrete and the New York dock is lined with brick, only a comparatively small amount of granite being used at the entrances for copings. The dock

at the Puget Sound Navy Yard, however, is lined throughout with granite and the material is the home product of the State of Washington, from the quarries at Index.

Interesting details of this work in general figures are: Earth excavation, over half a million cubic yards; concrete, over 100,000 cubic yards, and granite, nearly a quarter of a million cubic feet.

The caisson for the dock was constructed by the Seattle Construction & Drydock Company of Seattle.

The dock is built of concrete, with side walls and entrance coped and faced with granite blocks; the floor from abutment to head between the lowest altars being paved with concrete.

The Alaska Steamship Company's "Seward" is still plying between San Francisco and Mazatlan, Mexico, in the service of the Pacific Mail S. S. Co.

The S. S. "Dirigo" has taken the place of the S. S. "Dora" in the Alaska S. S. Co.'s service to Alaskan peninsular points. The "Dora" is now at the Heffernan Yards, Seattle, completing repairs necessitated by her recent damage in Alaskan waters.

The outlook for Alaska spring business is very good. The last three sailings of the Alaska Steamship Company's steamers have all been crowded.

Great importance is attached to the report of the Alaska Railroad Commissioners and those living in Alaska as well as those owning property interests there have been very much encouraged with the thought that the time is not far distant when the so much desired "Opening of Alaska's Coal Lands" and the establishment on a firm basis of industries in Alaska will be realized.



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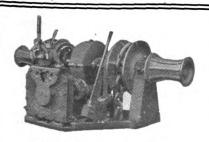
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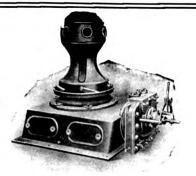
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CASES IN COURT

Judge Frank H. Rudkin of the Eastern District of Washington has been holding court in this district, at Seattle, since the middle of January, 1913, and the decisions published herewith, marked "By the Court," have been concurred in by both Judge Howard and Judge Rudkin.—Ed. Note.

UNITED STATES DISTRICT COURT, WESTERN DIS-TRICT OF WASHINGTON, NORHERN DIVISION.

Henry Hensel, Libelant, vs. Launch "Barghill." No. 2340.

Penrose L. McElwain, for Libelant.

Martin J. Lund, for Claimant.

On December 2, 1912, the libelant filed herein his libel against the launch "Barghill." The material allegations of the libel are as follows:

"That the said Henry Hensel's business is the selling of Campbell marine engines in the City of Seattle, King County, State of Washington, said city being in the said Western District of Washington, Northern Division.

That he at the request of the owner of the launch "Barghill" furnished an engine and its equipment on the faith and credit of said launch on the 26th day of June, 1912, to the amount of four hundred and three (\$403.00) dollars, no part of which has been paid.

That the said launch is now lying in Puget Sound at Salmon Bay, near Ballard. That all and singular the premises are true and within the admiralty and maritime jurisprudence of the United States and of this Honorable Court.

That the sum of four hundred and three (\$403.00) dollars still remains wholly unpaid and due to the libelant, Henry Hensel, although he has often requested the owner to pay same.'

On December 26, 1912, E. Wick entered herein his appearance and claim as the owner of such launch and as such intervening claimant on the same day filed exceptions to such libel, "upon the ground and for the reason that said libel does not state facts sufficient to entitle the libel-ant to any relief in this court."

The exceptions were orally argued to the court and in addition thereto briefs have been submitted by the respective parties. While certain admissions were made on behalf of claimant at the oral argument, the Court cannot consider the same, but is confined to the allegations of the libel in determining whether or not the exceptions

thereto are well founded.

Each of the parties have argued this cause upon the theory that the determination of the question presented by the exceptions depends upon whether or not the court of admiralty will enforce the lien provided by the laws of the State of Washington. Sections 1182 et seq., Rem. and Ball. Code, and all the authorities cited are confined to this question.

The libel nowhere alleges that the "engine and its equipments" were furnished to the launch, but even if it could be inferred that such was the case, it is impossible to determine whether they were so furnished as a part of her original construction" or as "repairs" as distinguished from original construction.

If the engine and its equipment were furnished to the launch as a part of her original construction, the contract therefor was not maritime in its nature and hence not within the jurisdiction of this court.

"Contracts for the building of vessels, it has been held by a long line of decisions in the United States, are not maritime contracts, and consequently are not within the maritime contracts, and consequently are not within the admiralty jurisdiction. And it is immaterial that the vessel has been launched. If her construction is incomplete, contracts relating to the completion are not maritime."

1 Am. and Eng. Enc. of L. and Pr. 1267. The Winnebago, 205 U. S. 354-362.

If the engine and its equipments were furnished to the launch as repairs, as distinguished from original construction (the same being alleged to have been furnished upon the order of the owner of the launch) the contract therefor would be a maritime one for which a lien would be en-forceable in admiralty. Such lien, however, is not referable to, or dependent upon, the law of the State of Washable to, or dependent upon, the law of the State of Washington, but would arise by virtue of the provision of the act of Congress of June 23, 1910. Chapter 373 (Fed. Stat. An., Vol. 1, Supp. 1912, p. 352), Sections 1 and 5 in so far as applicable being as follows:

Sec. 1. "That any person furnishing repairs, * * * to a vessel, whether foreign or domestic, upon the order of the owner * * * of such vessel, shall have a mari-

time lien on the vessel, which may be enforced by a proceeding in rem, and it shall not be necessary to allege or prove that credit was given to the vessel.'

Sec. 5. "That this act shall supersede the provisions of all state statutes conferring liens on vessels in so far as the same purport to create rights or action to be enforced by proceedings in rem against vessels for repairs, supplies, and other necessaries.'

This statute, however, was not intended to enlarge the right of lien so as to make contracts for original construction lienable in admiralty.

The United Shores, 193 Fed. 552.

It follows from the foregoing that since the allegations of the libel do not bring the cause within the purview of the act of Congress of June 23, 1910, the claimant's excep-tions to the libel must be sustained.

An order may be entered in conformity herewith, sustaining the claimant's exceptions to the libel, but therein granting leave to the libelant to timely amend his libel if he so desires, setting forth the necessary allegations to bring the lien therein claimed by him within the purview of the act of June 23, 1910.

UNITED STATES DISTRICT COURT, WESTERN DIS-TRICT OF WASHINGTON, NORTHERN DIVISION.

Standard Oil Company, a Corporation, vs. Launch "Margaret S," etc. Helen I. Sparling, et al., Intervenors. No. 2145. Filed Feb. 5, 1913.

By the Court:

The commissioner has classified numerous maritime liens in this case and fixed the amounts thereof. As to these there is no present controversy, but there are certain intervening claimants under the 43rd Admiralty Rule to the surplus left in the registry of the court, after satisfying all maritime liens. B. E. Legg claims under a mortgage on the boat in the sum of \$3,500.00, and the claim of Helen I. Sparling is based on a promissory note endorsed or assigned to her by the contracting firm that built the boat. the note being given by the owner as a part of the contract price for the boat's construction. The Sparling claim was rejected by the commissioner and exceptions have been filed to his decision. Her claim of lien is based on a statute of the state (Rem. & Ball. ('ode Sec. 1182), and the force and effect of the lien must be determined by the laws of the state and the decisions of the state court. In Dexter Horton & Co. v. Sparkman, 2 Wash. 165, it was held that a lien given by statute is personal to the laborer and does not pass with the assignce of a chosen action. True, a later statute provides that any lien or right of lien created by law is assignable but this provision is a part of the mechanics lien law of 1893 and does not extend to other statutory liens. If the legislature intended that it should the provision is clearly without the title of the act and void. Even under this latter statute it would seem that there must be an express assignment of the lien or right of lien and that the lien or right of lien would not pass by the more endergeneral to the first of the first of the more endergeneral to the first of the f by the mere endorsement or transfer of a promissory note. The mortgagee was not made a party to the proceedings in the state court to foreclose the Sparling lien and is therefore not affected by the judgment in that action. For these reasons the Sparling claim was properly disallowed Some question has been raised as to the allowance made to the contracting firm for the construction of the boat but the findings of the commissioner on that question are fully supported by the testimony. The findings and conclusions are therefore approved.

CHANGE OF SALES OFFICE

The Terry Steam Turbine Co. announces that on and after February 15 the general sales office will be removed to the works at Hartford, ('onn., and will be under the direction of Mr. Norman L. Snow. The New York office will remain under the charge of Mr. Frederick D. Herbert. as in the past.

The local inspectors at San Francisco of the Steamboat Inspection Service have found cause to revoke the license of Captain Christopher J. Olsen, who was master of the steamer "Samoa," when she stranded and became a total loss on January 28, 1913, at Pt. Reyes, Cal.



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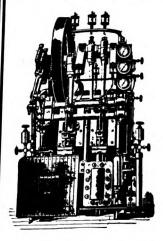
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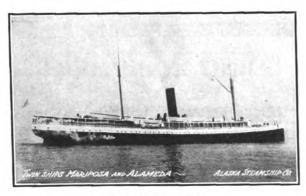
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SS. "ALAMEDA" TO LEAVE ON SPECIAL EXCURSION FOR PANAMA CANAL

John W. Chapman & Co. of San Francisco, announce that plans have been completed for a special excursion trip from the principal ports on the Pacific Coast to Panama, the steamer "Alameda" having been chartered for this occasion. The various Chambers of Commerce and commercial bodies on this coast have been very prompt in assuring their co-operation and supoprt, and all anticipate that this cruise will be a most successful one. Surely those wishing to view the marvelous work which has been accomplished with the Panama Canal could wish for no better an opportunity than this special sailing of the "Alameda" will afford.

The "Alameda" is a steel vessel of 5,500 tons displace-



S. S. "ALAMEDA" Vessel to Be Used for Panama Cruise

ment, double bottoms, water-tight compartments, etc., and is capable of steaming seventeen knots an hour. She was originally built for the San Francisco-Australian service and is ideally fitted for an excursion of this kind. The "Alameda" is equipped with oil-burning apparatus and wireless telegraphy. She has ample cold storage facilities and was recently renovated throughout. Her state rooms are exceptionally large and commodious and equipped with every modern convenience.

Itinerary: Saturday, March 15th, 9 a. m., sail Tacoma; Saturday, March 15th, 12 noon, sail Seattle; Tuesday, March 18th, 7 a. m., arrive San Francisco; Wednesday, March 19th, 12 noon, leave San Francisco; Thursday, March 20th, 12 noon, arrive San Pedro; Thursday, March 20th, 4 p. m., sail San Pedro; Saturday, March 29th, 7 a. m., arrive Panama.

Returning: Monday, April 1st, sail Panama; Wednesday, April 9th, 7 a. m., arrive San Pedro; Wednesday, April

9th, 12 noon, sail San Pedro; Thursday, April 10th, 12 noon, arrive San Francisco; Friday, April 11th, 12 noon, sail San Francisco; Monday, April 14th, 7 a. m., arrive Seattle; Monday, April 14th, 12 noon, arrive Tacoma.

The itinerary allows four full days at Panama, which is ample time to inspect the three divisions of the Canal. Special trains will be arranged for prior to the arrival of the steamer at Panama.

Rates of passage, including meals and berth, will be as follows: From Seattle and return, \$235 to \$260; from San Francisco and return, \$225 to \$250; from San Pedro and return, \$225 to \$250.

Captain F. Warner, formerly master of the steamships "Ohio," "Pennsylvania" and "Oregon," and who brought the "Cordova" from Wilmington, Del., to Seattle, will be in command of the "Alameda" on this cruise. In addition to the tourists bound for the Panama Canal the "Alameda" will take regular passengers from Tacoma and Seattle for San Francisco and San Pedro.

Any further information regarding this cruise can be obtained from John W. Chapman & Co., Merchants Exchange Building, San Francisco, or the Western Alaska S. S. Co., Seattle.

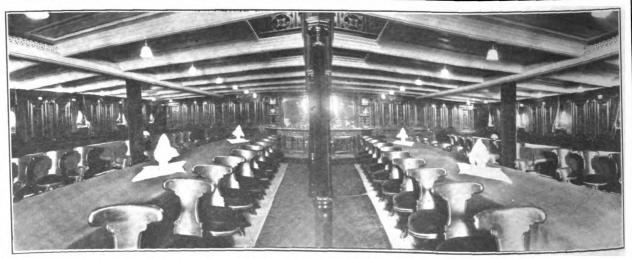
FLOATING DRYDOCK FOR INTER-ISLAND STEAM NAVIGATION COMPANY

A floating drydock is now under construction for the Inter-Island Steam Navigation Company of Honolulu, T. H., and four of the nine pontoons for this dock are practically finished and ready for the steel wings.

Work on the steel wings will be under way about the middle of March and it will be some time in the late summer before the dock is put into commission.

The dredging for this dock is rapidly nearing completion and the wharf should be finished by March 1st. The floating dock when completed will have a capacity of 4,500 tons, with an ultimate capacity of 7,000 tons. Under the present plans the dock will be 360 feet (ultimately 460) in length, 100 feet beam over all and 86 feet clear between wings. Mr. W. T. Donnelly of 17 Battery Place, New York, is the designer.

The S. S. "Saxonia" of the Hamburg-American Line's new trans-Pacific freight service is due at Puget Sound ports the latter part of June.



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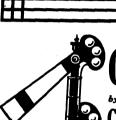
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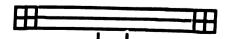
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GON-WASHING

THE DIESEL ENGINED SHIP "EAVESTONE"

This vessel, which is equipped with a Diesel engine, was recently built by Sir Raylton Dixon & Co. Ltd., Middlesborough, to the order of Messrs. Furness, Withy & Co., for their ordinary tramp service. The principal dimensions are as follows: Length 275 feet 9 inches, beam 40 feet 6 inches, by 18 feet 4 inches draught, with a displacement of 4,310 tons, a dead weight capacity of 3,050 tons, a block co-efficient of .76; with a propeller 12 feet 3 inches in diameter, 10 feet 7½ inches pitch, 64 square feet area, running at 90 revolutions per minute. The vessels makes something over 9 knots.

It is to be noted that while Messrs Richardson, Westgarth & Co. Ltd., nominally built the engines, the cylinders, pistons and covers were actually supplied by Messrs. Carels Freres, of Ghent, the remainder of the engines being made by the Middlesborough firm under the license and supervision of Messrs. Carels. This arrangement was adopted in consequence of the cylinders, pistons and covers being the most vital parts of the Diesel engine, and they are at the same time the most difficult parts to construct without previous experience. It is true Messrs Richardsons, Westgarth & Co. have had enough experience with gas engines, but rather than risk any failure in their first job in Diesel work, they decided to go half way and gain the necessary experience by making the least tender parts before handling entirely the more delicate details. In this they have shown their wisdom, and the shafting, columns, guides, etc., have been constructed by them under the inspection of Messrs. Carels' experts.

There has been one important departure from the original design viz: the fitting of a coarser pitched propeller, which has reduced the revolutions from 115 to 95; this is only 15 revolutions more than the normal revolutions of her sister ships, which are fitted with steam engines, and from this fact many useful and valuable comparisons should be obtained. It should be noticed that the reduction in revolutions has not affected the power developed, as the mean effective pressure on the pistons has been raised from 107 to 127 pounds per square inch. A prominent feature in the new vessel is, that by installing Diesel engines, more cargo space is available and her No. 2 hold is 14 feet longer than the corresponding hold in the sister steamship; this is a great advantage in the carrying capacity of the "Eavestone." It should be remembered, however, that the vessel is a single screw ship, and not a twin screw, as most of the other motor ships are, so that reliability is absolutely essential; and in view of this fact the owners have put her into the cross channel and continental service, until sufficient experience and confidence has been gained to permit the vessel to trade farther afield and cross the ocean.

The engines are of the Carels type, with four cylinders, 20 inches diameter and 36-inch stroke, and they give 800 brake horsepower at 95 revolutions per minute. fitted with a fly-wheel 9 feet in diameter and weighing 12 tons. The external cylinders are of the well known Carels shape, an ample water space is provided round the exhaust belt and this without sudden thickenings of metal, which would cause unequal stresses when expand-The part of the piston which has to sustain the heat and force of the combustion and carry the rings, is made separate from that which has simply to act as the valve to cover the exhaust ports. A gland is fitted round the bottom part of the piston to prevent any gases which might leak round the rings from escaping into the engine room. Flanges on the piston rod form the connections to which the two parts of the piston are bolted and the removal of the piston is effected from above. The piston, guides and

main bearings are all water cooled and the arrangement in this case for getting the water into and out of the piston seems to be a good one and likely to give every satisfaction, the glands being rotary and not reciprocating, so that wear is greatly reduced thereby. Water is admitted to the end of a horizontal tube carried on the lower part of the back of the cylinders, the water admission pipe being stationary and the gland in the horizontal tube oscillating with a very small amount of motion. Hollow arms on these tubes carry the water down to a second similar gland on a hollow link, the opposite of which has a similar connection to the crosshead, from which a short pipe leads the water into the hollow piston rod and so up into the piston. A similar set of connections on the other side of the crosshead forms the water outlet. Thus there are six small glands in each cylinder, but the amount of motion on each is very small, so that the wear and tear should not be great, and it may be noted that the gland has now been used on large gas engines, running at 200 revolutions with complete success. Besides this, as the engine under review is an open one and has not forced lubrication, any small leakage will not affect the oil. It appears, therefore, that the fears expressed by many steam engineers on this question are groundless, as the arrangement has proved to be capable of running at a speed far higher than would be encountered in any ordinary racing. It seems probable, too, that the engine of the future will be an open one so that saponification of the oil is not to be feared. The supply of cooling water is first taken through the Ravell air compressor into the pistons, then into the hollow guides and main bearings and from there it flows into a tank in the bilges, from which it is pumped by a steam donkey into a Richardson-Westgarth "contra-flo" condenser, used for the winches, steering gear, etc., and then overboard.

The design of the engines below the cylinders is in accordance with the usual steam engine practice of the firm, except that the work is on the basis of thousandths of an inch instead of sixty-fourths. The ordinary cast iron columns and guides are formed into a very solid and rigid frame work by being connected at the top. Two double-acting reciprocating scavenging pumps are fitted and are driven by ordinary air pump levers off the crossheads of the two center cylinders; the silencers are in the form of the usual slotted air bottles. Each of the scavenge pumps is made of sufficient size to give an ample supply of air to two of the cylinders, so that the ship can still come home on two cylinders in the event of the total collapse of one of the pumps. The valves of each scavenging pump are driven by a single eccentric of a rocking connection, their reversal being effected by the simple expedient of having the eccentrics loose on the shaft. Relief valves are also fitted at each end of the scavenging air pipe. On the after cylinder are smaller rocking levers. which drive the reciprocating cooling water pumps, two bilge pumps and the fuel pump for lifting oil from the bunkers to the setting tanks.

The lubrication throughout the engine is of the simplest form, consisting of sight feeds on the main bearings, guides, etc., though a small reciprocating pump is fitted on the crosshead to lubricate the crosshead pins, owing to the comparatively small movement, and to the pressure on the pin being always in the same direction. Two Mollerups provide the supply for the cylinder walls.

A great feature claimed by the builders for the engines is that all the main engine auxiliaries are direct driven from the main engines themselves, the Reavell air compressor off the front end of the shaft and the scavenge.



water, circulating, bilge and fuel pumps off rockers. This is a very desirable practice, as the attention of the engineer on duty can be concentrated on his main engines; nor is there the need for independent auxiliaries, as there is with the steam engine, and greater silence results. There are, of course, independent auxiliaries in the engine room, as the winches and whistle, the electric light engine and the steering gear at times are driven by steam. For this purpose a coal-fired donkey boiler is fitted and this necessitates a donkey pump, circulating pump and condensor in the engine room. There is also a steam ballast pump, which is also used as a turning engine by fitting a rope drive to a worm gear on the main shaft. A small evaporator and a steam electric lighting set, and an air compressor of about 60 horsepower-two thirds of the power of the main compressor-to act as a standby, and to run when the ship is entering or leaving port, so as to make certain of a good supply of air in the air receivers for maneuvering. This with the three air receivers affords plenty of reserve for maneuvering purposes; ordinarily the main compressor delivers a considerably greater quantity of air than is required by the for fuel injection, so as to maintain presengine sure in the receivers to allow for a certain amount of manuevering without starting up the auxiliary compressor. On a long voyage, however, when no manuevering is required, this would mean waste, but this is obviated by arranging for the steering gear to be worked by compressed air when clear of the land, steam being substituted when approaching port. A centrifugal bilge pump is fitted, driven by chains off the auxiliary compressor, to take the place of the steam bilge ejector under British corporation rules

It has been stated that there is quite a feeling among bridge officers that steam is better than compressed air on account of the visibility as well as the audibility of the signal, by which the ship which is signalling can be identified. Of course it does not help at night but it helps for a good proportion of the twenty-four hours, and at night men are more careful and try to avoid maneuvers in which the whistle has to be relied upon to indicate their intentions.

We are indebted to The Engineer, of London, England, for some of the notes on the running of the engine; their representative being on board on a short trial run, by courtesy of Richardsons, Westgarth & Co., Ltd., and Furness, Withy & Co., Ltd. The general appearance of the engines from the starting platform is almost exactly like that of a marine steam engine, except that there seems to be more complication about the reversing fitments, although in practice this is really not the case. The handling of the engines was very smart; in several cases in which they were reversed from "full ahead" to actually running astern, required only from 9 to 10 seconds, and this without any haste, but in fact with intentional deliberation. Full ahead to full astern has been obtained in six seconds. When the engine took up the running after a reverse, the relief valves on the top of the cylinders lifted for a revolution, showing that there must be some slight accumulation of oil in the cylinders, as the valves are set to lift at 620 pounds. It was observed that it only took about three seconds from the ringing of the telegraph until the engine was actually running ahead, when the gear was already in the ahead position. The absence of vibration is remarkable even at full speed and on deck one can hardly tell that the engines are running. Doubtless the four cylinders, the balancing unspoilt by a big reciprocating scavenging pump at one end of the shaft, together with the rigid construction of the framing, has much to do with this. The glands on the lower ends of

the pistons are very effective and there is no sign of any smell or smoke in the engine room. The motion of the water-cooling pipes is reported to look jerky, but the parts are good stiff castings and there was not a vestige of a leak.

On the question of noise it is stated that the noises are exactly the equivalent of those made by a steam engine, except that the air pump levers emit a sort of rattle, which is probably accounted for by the fact that they appeared rather on the light side. These levers make the engine room noise greater than that of the "Selandia," but she of course has an enclosed engine and forced lubri-The total engine noise, however, is very much less in the "Eavestone," as there are no auxiliaries. The noise on the tops is, of course, much more than in a steam engine, though it is confined to the cams and tappets and the seating of the valves, and this is by no means great. It is a curious fact, however, that in spite of the extreme care and accuracy necessary with the Diesel, there is scarcely one engine running in which all the cam rollers and tappets are equally adjusted. For instance, in this case, in two of the cylinders the fuel valve rollers were making less noise than those of the scavenge valves, and for fuel valves they were exceedingly quiet. In the other two cylinders, however, the exact reverse was the case, and the scavenge valve rollers were exceedingly quiet, the fuel valve rollers being somewhat more noisy, though not so noisy as fuel valve rollers go. The designed clearance between the rollers and the cams of the scavenge valves is 0.5 minutes, and it was noticed that this was filled up by a film of oil, so that no daylight could be seen. This is very much closer than can be obtained with the rollers of the exhaust valves of a four-cycle engine, where the clearance is usually set at about 2 minutes.

The engine room is extraordinarily compact, and yet there is plenty of room all round the engine. As has been previously mentioned, the Diesel engine gives 14 feet more on the No. 2 hold than the steam engine, though it should be borne in mind that if a comparison of this sort is to be made an oil burning steam engine should be taken in order to be strictly fair. In this case, however, the "Eavestone" carries 3,050 tons at 9 knots on something under 31/2 tons of fuel per 24 hours, whereas a sister coal burning ship carries 3,150 tons at 9 knots on 121/2 tons, but this is for short voyages and includes lighting and banked fires. In the "Eavestone" 150 tons of oil are carried in her double bottom under Nos. 3, 4 and 5 holds, enough for 42 days' running. At present Texas residual oil with a specific gravity of 0.92 is being used, and the consumption was given as 0.47 pounds per brake horsepower per hour, a very good result for a two-cycle engine. The consumption of lubricating oil was stated to be four gallons per day.

The "Eavestone" made her first ocean trip to the United States (leaving in October last) on the same service as that on which a number of her sister ships, equipped with steam engines are employed, and very valuable information on the whole question of the comparative merits of the steam and oil engine should soon be obtained. Doubtless some slight modifications in various details may suggest themselves, as experience is gained in the practical operation of the Diesel engine and its application to marine propulsion.

CANADIAN L. H. T ."ESTEVAN" REACHES VICTORIA

The new lighthouse tender "Estevan," which just recently reached Victoria for service on this Coast, is of the following dimensions: Length, 200 ft.; breadth, 38 ft.; depth, 17 ft. 6 in.; draft, 11 ft. 6 in.; tons, 375; speed, 12 knots; coal supply, 260 tons.



THE MARINE STEAM BOILER

At the present time the steam boiler for marine purposes is constructed in a great diversity of sizes, shapes and methods, in which the heat is applied for generating steam for motive purposes. In order of their development, we may mention the following types: the wagon boiler, cylindrical boiler, cylindrical flue boiler, multi-tubular boiler; the water-tube boiler, is built in many different ways, as witness the Babcock Wilcox, Heine, Root, Almy and Stirling boilers and many other patterns, as well as the locomotive type, the Scotch marine and other boilers.

Boilers are generally provided with a feed water heater and mud drum, or a combination of both devices, in the shape of a feed water filter and heater; also they are mounted with suitable safety valves, pressure and water gauges, water try or test cocks; surface and bottom blow-off cocks, feed water pumps, etc. Of course the most important of these boiler attachments is the safety valve, which is usually a flat disk valve, connected directly with the steam space of the boiler, so that it automatically opens when the pressure exceeds a certain fixed limit, which limit is regulated by the compression of a suitable steel spring on the external surface of the valve.

The capacity of a boiler is measured or rated by the number of pounds of water which it is able to evaporate per hour and is generally designated as horse power, the evaporation of 34½ pounds of water per hour at 212 degrees Fahr, being deemed equivalent to the heat required to convert 30 pounds of water at 100 degrees Fahr, into steam at 70 pounds of pressure. The capacity of a boiler depends on the draft, the kind of fuel used and also on its heating and grate surface, the latter factor regulating the amount of fuel that can be consumed in a given time and the former the utilization of heat created thereby; hence the parts mentioned should bear a certain relation to each other, as well as to the smoke stack or artificial or forced draft if such be used.

The amount of coal that can be burned in an hour varies from 6 to 100 pounds per hour, according to the construction of the boiler and the nature of the draft; with forced draft, such as is used in marine boilers, from 60 to 120 pounds of bituminous coal may be consumed per hour, per square foot of grate surface. Accordingly the amount of water evaporated per hour, per square foot of grate surface, depends on the rate of combustion of other conditions and notably also on the care taken in firing. Specially constructed grates with automatic regulation and other attachments aid greatly in the proper combustion of the fuel, and the highest efficiency is obtained with clean boiler and tube plates, clean tubes and careful firing, at a slow rate of combustion. It is generally assumed that under ordinary conditions one pound of coal will furnish from 8 to 12 pounds of steam for a water-tube boiler and about the same amount for the ordinary marine (Scotch) boiler.

If the number of pounds of fuel consumed per square foot of heating surface per hour is denoted by P, and the evaporating power per pound of fuel is H pounds of water, the grate surface, S, of a boiler in square feet for a capacity of n horse power equivalent to the evaporation of 30 n pounds of water per hour is calculated after the following rule:

$$s = \frac{30N}{H \times P}$$

The heating surface of a boiler is the surface exposed to the flames and fuel gases and is variously estimated at 9 to 15 square feet per horse power.

The steam space in a boiler should hold the volume of steam required to operate the engine and this should be about 0.9 cubic feet per horse power as a minimum; the water space should be about double the steam space.

The most serious possibility connected with the use of steam boilers is their liability to explosion. Explosions may be due to defective design, workmanship nad material, or to deterioration from corrosion, incrustation and wear, but most explosions are doubtless due to mismanagement, such as the overloading of the safety valve; the sudden opening or closing of a large steam or safety valve; want of water, when it has gone below the low-water line and left the crown sheets dry; placing a stopp valve between the boiler and safety valve, etc. Bursting of the safety valve and superheating of the water are also ocasional causes of explosion. Too much care and attention, therefore, cannot be bestowed on the boilers by their attendants, both in regard to safety and economy of operation.

One of the rules of the United States Steamboat Inspection Service reads as follows: "It shall be the duty of an engineer, when he assumes charge of the boilers and machinery of a steamer, to forthwith thoroughly examine the same, and if he finds any part thereof in bad condition, caused by neglect or inattention on the part of his predecessor, he shall immediately report the facts to the local inspectors of the district, who shall thereupon investigate the matter."

It is unfortunately true that this ruling is not always fol-

lowed out by engineers who assume charge of boilers and machinery on shipboard, but this is seldom the fault of the engineer; the circumstances and conditions under which he ships rarely give him time to take more than a casual look around and make himself acquainted with the feed and bilge piping arrangement of the main and auxiliary engines, the use of and manipulation of the different valves, etc. The boilers are usually under steam and a considerable time must generally elapse, probably a round voyage must be completed, before an opportunity occurs to examine the boilers internally. When, however, a boiler is opened up for inspection and examination, and the engineer has satisfied himself it is perfectly safe to enter; having seen that all steam valve connections to other boilers that may have steam on them are closed and locked, so that they cannot be opened, and that the air in the boiler is pure and that the boiler is properly ventilated by opening the bottom manholes, he may then go inside, and during his examination should carefully look for loose, broken or cracked stays and braces, blisters, bulges, thin and burnt places; most of these defects can be seen, but if not, they can always be detected by the testing hammer. If a blister is found there must be no delay in having it trimmed or patched, as the case may require. The seams, rivets, tube ends and stays should all be exemised for particular trimmed or patched. should all be examined for possible leaks; the thickness of scale on the various heating surfaces of the boiler, on the tube sheets, combustion chamber crowns, tubes and furnace crowns should be carefully examined and noted, and if time permits the boiler should be thoroughly sealed and cleaned out. All screwed studs and stays should be carefully examined and sounded to insure that none are broken or cracked, as scale will sometimes hide these defects. When cylinder oil is used in the high-pressure engine, and even when grease extractors have been installed, all the internal surfaces of the boiler should be carefully inspected for any deposit or film of oil, which is infinitely more dangerous to a steam boiler than an unusual thickness of scale; the reason of this is that the film of oil prevents the water coming in contact with the internal heating surface of the boiler, and when the fires are started the heat from the furnace gradually heats that portion of the plate until it becomes red or white hot, as the case may be; this will either result in an employing an explorate a hunt and coleither result in an explosion, or at least a burnt and collapsed furnace crown or combustion chamber top, or the burning of the plates of that portion of the boiler where the oil has lodged. After the steam and water spaces have been inspected the furnaces, combustion chambers and smoke box end of the tubes should be examined for leaks. which will be easily seen by the accumulation of salt or rust around them, or otherwise by bare or clean spots where the soot has been blown off by the escaping water or steam The back sheets and screwed stays of the combustion chamber should have special attention, as it is here that the hottest gases and flames impinge, and also at this part the greatest strains of stresses take place owing to contraction and expansion. The exterior of the boiler must also receive careful examination, as well as the internal portions, for no part of the boiler is of such non-importance that it can be permitted to escape inspection and if necessary immediate repair; all valves, pipes and connections must receive their share of attention and have their glands packed, while all the boiler mountings, valves, fittings and attachments, together with surface and bottom blow-of cocks, feed check valves, etc., must be put in the best possible order, before again filling the boiler, starting area and raising steam. It is no little satisfaction to the engineer, and relieves his mind of puch anxiety, when he knows the and relieves his mind of much anxiety, when he knows the exact condition of his boilers, both internally and externally, and that they are free from scale or oil deposits, corrosive or incrustation, and that they may be relied upon to furnish execute with to furnish steam at their full capacity and pressure, with perfect safety; we repeat, therefore, that too much care and attention cannot be bestowed on a boiler, if perfect safety and economy in operation are to be insured.

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NEW APPOINTMENTS FOR J. H. BUNCH AND C. J. JONES

Mr. John H. Bunch is now the general freight and passenger agent of the Copper River and Northwestern Railway Company, the Alaska Steamship Company having on March 1st made this appointment from the vice-president's office.

Mr. Bunch has been associated with the transportation business for many years past, having been employed in the traffic department of the Northern Pacific Railway Company at Seattle and Tacoma for ten years, and in the service of the Pacific Coast Steamship Company three years. Mr. Bunch has been with the Alaska Steamship Company about ten years, having served with both the Northwestern Steamship Company and the old Alaska Steamship Company before their consolidation. He joined the Alaska Steamship Company as clerk to President Charles E. Peabody in 1903.

Mr. Bunch has numerous friends in Seattle and elsewhere and all expect that he will prove very efficient and popular in his new capacity.

Mr. C. J. Jones, who has been traffic manager of this company for some time past, has resigned to accept an appointment offered him by the Southern Pacific Railway Company, with which company he was identified for many years before coming to Seattle, holding various positions in the traffic department and finally winning promotion to assistant general freight agent at San Francisco.

Mr. Jones has made many friends in Seattle who will regret to see him leave, and he will be especially missed by the traffic men of the steamship and railway companies, with whom he is popular.

The office of traffic manager of the Alaska Steamship Company is to be abolished.

NEW APPOINTMENTS MADE IN ALASKA PACIFIC STEAMSHIP COMPANY'S SERVICE

Mr. R. J. Ringwood, who for some time past has been the general freight and passenger agent of the Alaska Pacific Steamship Company and the Alaska Coast Company, with headquarters at San Francisco, has received the appointment of traffic manager for this company. Mr. Ringwood's many friends and admirers join with the Pacific Marine Review in wishing him every success as traffic manager of a company which is making rapid progress on this coast and which is well and favorably known from Southern Californian to Alaskan ports.

Mr. R. M. Semmes, who has been the assistant general freight and passenger agent, stationed at Seattle, has been promoted to the position made vacant by Mr. Ringwood, this appointment being effective March 1st. Mr. Semmes is well known on the Pacific Coast and congratulations are being received from his many friends on Puget Sound and in Alaska. Several changes have also occurred on the different vessels of the Alaska Pacific Steamship Company. Mr. N. A. Smith, who for some time past, has been the chief officer on the S. S. "Watson" has been promoted to commander of the S. S. "Buckman." Captain James Brennan, formerly master of the S. S. "Admiral Sampson" has been changed to the "Watson," succeeding Captain John Griffiths who will become master of the steamer "Admiral Farragut," which steamer will leave Seattle on

her maiden voyage in this company's service to San Francisco on March 20th

M. E. B. A. ENTERTAIN MEMBERS AND FRIENDS

The Marine Engineers' Beneficial Association No. 38, spent a very pleasant evening on March 1st last, when their members and friends were entertained at the association's annual ball, given in Seattle.

Mr. Alexander McGregor, president of the association, made a brief address appropriate to the occasion which was supplemented by Mr. Hare who made a few remarks regarding the "Marine Engineer of Today."

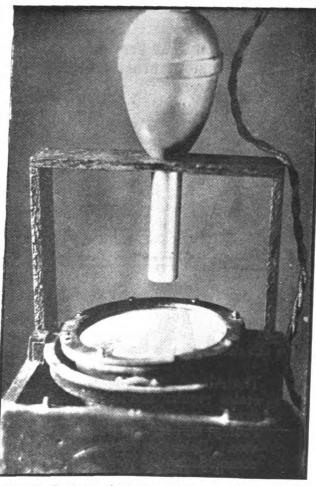
The ball was a huge success and the two hundred and fifty invited guests who were present enjoyed a most delightful evening.

The committees were arranged as follows:

Reception Committee-Alex McGregor, D. W. Miller, D. H. Callahan, W. B. Lackling and C. J. Clark.

Floor Committee-C. S. Follett, R. P. Marshall, W. M. Cocmbs, E. R. Lacey and F. Seymour.

Committee on Arrangement-K. D. Logan, E. R. Lacey, H. A. Semdars, A. Butterfield and F. Seymour.



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WHEN WRITING TO ADVERTISERS, PLEASE MENTION THE PACIFIC MARINE REVIEW

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MARINE INSURANCE NOTES

Reports from London, the greatest marine insurance center of the world, indicate that the year 1912 was most disastrous for marine underwriters, and the greatest complaints come from Underwriters at Lloyds. Of course the loss of the "Titanic" had much to do with this condition but even without that the losses sustained exceed those of any previous year if the preliminary figures are borne out by final settlements.

On this coast, however, companies and agencies report, almost without exception, a very prosperous year, and even the loss of the "Workman" in the latter part of December, in which most of the local underwriters were heavily interested, failed to turn the scale.

Figures are not available for this issue but in the April number will be given the final figures as turned in to the insurance commissioners.

In this connection it is interesting to note from a report made by the Thames & Mersey Marine Insurance Co., Ltd., that the average underwriting profits of that company for a period of thirteen years, ending December, 1911, was about 1.8 per cent, and that on a premium income of nearly five and one-half million pounds sterling. Truly no better object lesson could be had that some reforms in marine underwriting are necessary.

WRECKS, CASUALTIES AND MISCELLANEOUS REPORTS

"SEWARD," str. from San Francisco for Panama, previously reported at Mazatlan with part of rudder gone, was towed to San Pedro where a new rudder was installed and the voyage was resumed. For this purpose the steamer was tipped by filling the forward ballast tanks, and no cargo was discharged.

"JOHN SMITH," bktn., while lying in Oakland Creek, Calif., caught fire on Feb. 3rd, but the blaze was extin-

guished with the aid of the fire boat "Dennis Sullivan," but little damage resulting.

"ADMIRAL SAMPSON," str., at Tacoma on Feb. 10th, was in collision with the str. "Sioux" and had her stern frame cracked.

"SEMINOLE," str., from Selby's Landing for San Francisco, was in collision on Feb. 14th, with the bay steamer "H. J. Corcoran" and both steamers "turned turtle," but were eventually picked up and towed to San Francisco. The "H. J. Corcoran" had on board treasure to the value of about \$50,000, but as the safe in which it was contained could not be located, it was evidently lost when the steamer turned over. A wrecking outfit with divers has been engaged to seek for the lost safe. The local inspectors have found masters and pilots of both vessels guilty of negligence and have suspended their licenses for six months.

"MIMI," Ger. sp., from Valparaiso for Portland went ashore on the North Spit of the Columbia River on the morning of Feb. 14th, during a dense fog. At last accounts the vessel was undamaged but was well up in the sand. Tenders for floating have been invited.

"LURLINE," str., at Honolulu loading for San Francisco had a fire in the boiler room which was extinguished with the aid of the fire department, after considerable damage had been done by the fire and heat. Later while on passage to San Francisco heavy weather was met with and she suffered considerable damage about the decks.

"ADVENT," schr., from Santa Rosalia for Coos Bay, when attempting to cross the bar was obliged to anchor and commenced to pound heavily. Latest advices are that the schooner will probably be a total loss.

"BEAVER," str., from Portland Jan. 31st, for San Francisco ran aground in the Columbia and after about twelve hours efforts was floated and proceeded. On survey it was found that a large number of rivets in the engine seating were loose and the steamer is now under repair.

COMMERCIAL MOVEMENTS ON THE PACIFIC COAST

SEATTLE PORT WARDEN'S REPORT—MO JANUARY, 1913	NTH OF
Deep Sea Vessels—Arrivals	
,	Net
Nationality— No.	Tonnage
American	151,384
Satting	4,083
States 2	1.600
10	47.220
papanese	23.360
German 1	3,084
Totals136	230,731
Departures	200,101
American	140.070
-aning	149,972
omited States	2,761
British 2 Branese 14	2,511
Japanese 14 German 7	47,537
German 7 2	29,460
2	6,168
Totals120	000 400
	238,409
mound	110 400
Outbound	119,400
	120,064
r 10M	
Pacific Coast points	070 100
Alaska points Local points	870,123
Local points Philippines	242,919
Philippines Pacific Ocean	646,523
Pacific Ocean	5,184
, , , , , , , , , , , , , , , , , , , ,	63,877
Total value domestic imports\$	1,828,626
British Columbia	67,014
Australia Serman	548
Germany	14.336
	17,500

France		1,009
Scotland	•••••	868
England	••••••	9,973
Italy		4 618
South America	·····	15,400
Norway		4 035
Switzerland		4.555
Orient		1,500,935
Total value foreign imports		_
Exports		51,623,292
To		
Coastwise points		
Dhilipping		
Philippines Hawaiian Islands		158,628 -
Tool points	•	166,937
Local points		591,350
New York		91,455
Alaska	······	394,914
Total value domestic exports	······	1,992,035
British Columbia	\$	480,115
Orient	Ψ	867,205
England	•••••	17,994
Scotland		3,902
Germany		7.542
South America	••••	52,606
Australia		46,100
Total value foreign exports	\$1,	475,464
COASTWISE AND FOREIGN COMM WASH.—MONTH OF JAN Principal Foreign Ship	UARY, 1913	СОМА,
Articles—	Quantity, V	Value.
Flour, bbls.		625.747
Wheat, bu.		66,703

44	PACIF	C MARI	NE REVIEW	
Cotton, raw, bales		630,780	Canada 2,333	
Tobacco, lbs.			Mexico 3,967	
Coal, bulk, tons			Cuba	
Tallow, casks		,	Argentina 12,421	
Machinery, pkgs.			Brazil	
Lumber, feet		•	Chile	
Ship's spars Salmon, cases			China 1,192 Hongkong 12,196	
Salt fish, pkgs.			Japan 15,380	
Box shooks, bdls			Philippine Islands 8,481	
Copper, bars			Australia	1,173
Salt hides, pkgs	1,000		Other countries 2,097	-, -
Paraffine wax, pkgs	6,091	21,269		
Steel bars, angles, etc.		59,287	Total\$317,065	\$10,010
Autos, pkgs.		33,464	Principal Imports.	
Sewing machines, pkgs		23,043	Fertilizers, 1,788 tons	\$ 55,601
Miscellaneous to British Columbia.		23,036	Coffee, 263,500 lbs	
Miscellaneous to Japan, China, Man South America and Europe		111,611	Seeds	
South America and Europe	·······	111,011	Spirits, wines and liquors, 15,616 gals	
Total foreign shipments		\$2,069,933	Cigars and tobacco	
Principal Coastwise		42 ,000,000	All other articles	105,104
Articles—	Quantity.	Value.	Total	\$317.065
Flour, bbls.		\$ 79,541	Dutiable	
Lumber, feet		85,485	Free of duty	
Coal, tons		38,040	·	
Wheat, bu.	120,723	96,863	Total	\$317,065
Oats, tons		3,158	Exports to Noncontiguous Territory of the Unit	
Smelter products		220,186	Hawaii—	
Feed, tons		63,969	Crude oil, 672,000 gals.	\$12,800
Hay, tons		8,507	Distillate, 43,200 gals.	6,168
Shingles, bdls. Shoes, cases		9,000 1,144	Miscellaneous	25
Miscellaneous to Alaska		16,255		910 002
Miscellaneous to California, Hono		10,200	Total	
and New York		233,973	Movement of Vessels Engaged in Foreign	Trade.
•			Entered—	et tonnage.
Total coastwise shipments		\$ 871,628	No. No. 4 American	
Grand total exports for 1913		2,941,561	3 British	11.208
Coastwise Rec	ceipts		1 German	3,651
Alaska	·	\$ 199,171~	1 Norwegian	3,185
('alifornia				
New York	· · · · · · · · · · · · · · · · · · ·	19,100	9 Total	27,077
		0.050.440		
Total coastwise receipts		\$ 676,446	Cleared—	
Foreign Rec		ø 0-0		et tonnage.
British Columbia		\$ 300,754	2 American 1 British	3 324
China and Japan			1 British	
South America		75,000	3 Total	5.708
Total foreign receipts		\$1,743,304	Number seamen arrived	393
Total coastwise receipts			Number seamen departed	105
•	•		Passengers arrived	
Total receipts		\$2,419,750	Passengers departed	23
			Lumber Evente From Portland	
Grand total receipts for 191	13	\$2,419,750	February. Since Januar	v 1. 1913.
Shipping R			Feet Value Feet	Value
		y, January,	value 1000	
	1913	1912.	(Foreign) 8,470,507\$106,072 16,825,938	\$205,018
Deep sea arrivals, number	103			
Deep sea departures, number Inward registered tonnage, ton	104	$egin{array}{cccc} 4 & & 94 \ 7 & 259.800 \end{array}$		\$342.887
Outward registered tonnage, ton	s 295.95	$\begin{array}{cccccccccccccccccccccccccccccccccccc$		+
Inward cargo tonnage, ton	37.80	6 46,191		
Outward cargo tonnage, tons	69.87	0 95,960) Bushels Value Bushels	Value
Out with our be committed to the committee of the committee our beautiful to the committee of the committee		-,-	615,138\$538,819 2,147,569	
		BUGGGG	(Domestic)	
= _ = _		BUSINESS	545,727\$518,440 990,552	\$ 900,959
OFFICIAL STATEMENT OF T	HE CUSTOMS			
OF THE DISTRICT OF LOS	ANGELES, CAL	IFORNIA,		
OFFICIAL STATEMENT OF T OF THE DISTRICT OF LOS A DURING THE MONTH	ANGELES, CAL	IFORNIA,	Flour Exports From Portland.	
OF THE DISTRICT OF LOS A DURING THE MONTH	ANGELES, CAL OF JANUARY,	IFORNIA, 1913 Exports	Flour Exports From Portland. (Foreign) 3. Barrels Value Barrels	Valu e
OF THE DISTRICT OF LOS A DURING THE MONTH Collections. Impo \$86,133.45\$317,	ANGELES, CAL OF JANUARY, orts. 065	1913 Exports \$10,010	Flour Exports From Portland. (Foreign) 3. Barrels Value Barrels	Valu e
OF THE DISTRICT OF LOS A DURING THE MONTH	ANGELES, CAL OF JANUARY, orts, 065 ts by Countries.	1913 Exports \$10,010	Flour Exports From Portland. (Foreign) 5. Barrels Value Barrels 0 52,375 \$215,500 83,699	Value \$327,169
OF THE DISTRICT OF LOS A DURING THE MONTH Collections. Impo \$86,133.45	ANGELES, CAL OF JANUARY, orts. 065 is by Countries. Impor	1913 Exports \$10,010	Flour Exports From Portland. (Foreign) 5. Barrels Value Barrels 0 52,375 \$215,500 83,699	Value \$327,169
OF THE DISTRICT OF LOS A DURING THE MONTH Collections. Impo \$86,133.45	ANGELES, CAL OF JANUARY, orts. 065 ts by Countries. Impor	1913 Exports \$10,010 ts. Exports	Flour Exports From Portland. (Foreign) 5. Barrels Value Barrels 0 52,375 \$215,500 83,699 (Domestic) 3. 41,575 \$178,772 73,375	Value \$327,169
OF THE DISTRICT OF LOS A DURING THE MONTH Collections. Impo \$86,133.45	ANGELES, CAL OF JANUARY, orts. 065 s by Countries. Impor	IFORNIA, 1913 Exports \$10,010 ts. Exports 69 51	Flour Exports From Portland. (Foreign) Value Barrels 5. \$215,500 83,699 (Domestic) \$. 41.575	Value \$327,169
OF THE DISTRICT OF LOS A DURING THE MONTH Collections. Impo \$86,133.45	ANGELES, CAL OF JANUARY, orts. 065	IFORNIA, 1913 Exports \$10,010 ts. Exports 69 51 07	Flour Exports From Portland. (Foreign) Value Barrels \$215,500 \$3,699 (Domestic) \$178,772 73,375 Barley Exports From Portland. (Foreign) Bushels Value Bushels Purchala Purchal	Value \$327,169 \$320,282 Value
OF THE DISTRICT OF LOS A DURING THE MONTH Collections. Impo \$86,133.45	ANGELES, CAL OF JANUARY, orts. 065	IFORNIA, 1913 Exports \$10,010 ts. Exports 69 51 07	Flour Exports From Portland. (Foreign) Value Barrels \$215,500 \$3,699 (Domestic) \$178,772 73,375 Barley Exports From Portland. (Foreign) Bushels Value Bushels Purchala Purchal	Value \$327,169 \$320,282 Value
OF THE DISTRICT OF LOS A DURING THE MONTH ('ollections. Impo \$86,133.45 \$317, Imports and Export Austria-Hungary Belgium Denmark Germany	ANGELES, CAL OF JANUARY, orts. 065	### IFORNIA, 1913 Exports \$10,010 ts. Exports 69 51 07 11 58	Flour Exports From Portland. (Foreign) Value Barrels Value Bushels Val	Value \$327,169 \$320,282 Value \$262,562
OF THE DISTRICT OF LOS A DURING THE MONTH Collections. Impo \$86,133.45 \$317,	ANGELES, CAL OF JANUARY, orts. 065 s by Countries. Impor \$ 4,0 28,0 20,6	### IFORNIA, 1913 Exports \$10,010 ts. Exports 69 51 07 11 158 554	Flour Exports From Portland. (Foreign) Value Barrels Value Bushels Val	Value \$327,169 \$320,282 Value \$262,562
OF THE DISTRICT OF LOS A DURING THE MONTH Collections. Impo \$86,133.45 \$317, Imports and Export Austria-Hungary Belgium Denmark Germany Italy Netherlands	ANGELES, CAL OF JANUARY, orts. 065	Exports \$10,010 ts. Exports 69 51 077 11 158 154 195	Flour Exports From Portland. (Foreign) Value Barrels \$215,500 \$3,699 (Domestic) \$178,772 73,375 Barley Exports From Portland. (Foreign) Value Bushels 104,706 \$70,362 381,139 (Domestic) \$4,932 60,901	Value \$327,169 \$320,282 Value \$262,562
OF THE DISTRICT OF LOS A DURING THE MONTH Collections. Impo \$86,133.45	ANGELES, CAL OF JANUARY, orts. 065	IFORNIA, 1913 Exports \$10,010 ts. Exports 69 51 07 11 58 54 195 118 192	Flour Exports From Portland. (Foreign) Value Barrels Val	Value \$327,169 \$320,282 Value \$262,562 \$ 36,457
OF THE DISTRICT OF LOS A DURING THE MONTH Collections. Impo \$86,133.45 \$317,	ANGELES, CAL OF JANUARY, orts. 065 as by Countries. Impor \$4,0 20,6 6,0 22,6 1,7	### IFORNIA, 1913 Exports \$10,010 Its. Exports 69 51 07 11 558 54 195 118 1992 1947	Flour Exports From Portland. (Foreign) Value Barrels Val	Value \$327,169 \$320,282 Value \$262,562 \$ 36,457
OF THE DISTRICT OF LOS A DURING THE MONTH Collections. Impo \$86,133.45 \$317,	ANGELES, CAL OF JANUARY, orts. 065 Impor \$4,0 20,6 6,0 22,6 4,5 4,5	### IFORNIA, 1913 Exports \$10,010 Its. Exports 69 51 07 11 158 54 195 118 192 147 1478 \$2,00	Flour Exports From Portland. (Foreign) Value Barrels Value Barrels O 52,375 \$215,500 \$3,699 (Domestic) S 178,772 73,375 O	Value \$327,169 \$320,282 Value \$262,562 \$ 36,457 93,940 tons \$3,002 tons
OF THE DISTRICT OF LOS A DURING THE MONTH Collections. Impo \$86,133.45 \$317, Imports and Export Austria-Hungary Belgium Denmark Germany Italy Netherlands Norway Spain Switzerland Turkey, Europe England	ANGELES, CAL OF JANUARY, orts. 065	Exports \$10,010 tss. Exports 69 51 077 11 158 18 19 19 19 19 19 19 19 19 19 19 19 19 19	Flour Exports From Portland. (Foreign) Value Barrels Value Bushels Value Bushels Value Bushels Value Bushels Value Barrels Value Bushels Value Barrels Value Bushels Value Barrels Val	Value \$327,169 \$320,282 Value \$262,562 \$ 36,457
OF THE DISTRICT OF LOS A DURING THE MONTH Collections. Impo \$86,133.45 \$317,	ANGELES, CAL OF JANUARY, orts. 065	Exports \$10,010 tss. Exports 69 51 077 11 158 18 19 19 19 19 19 19 19 19 19 19 19 19 19	Flour Exports From Portland. (Foreign) Value Barrels Value Barrels O 52,375 \$215,500 \$3,699 (Domestic) S 178,772 73,375 O	Value \$327,169 \$320,282 Value \$262,562 \$ 36,457



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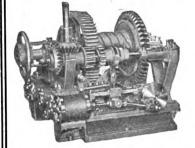
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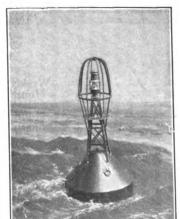
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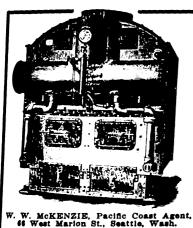
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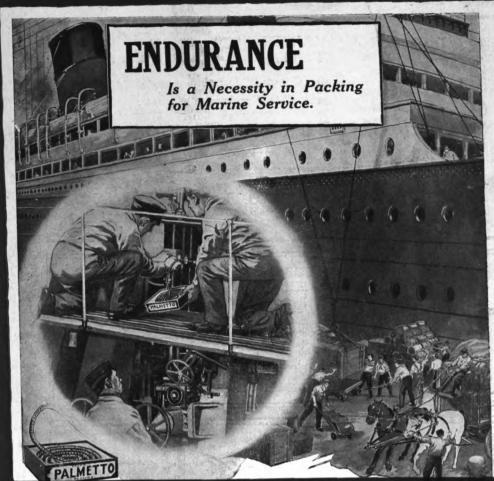
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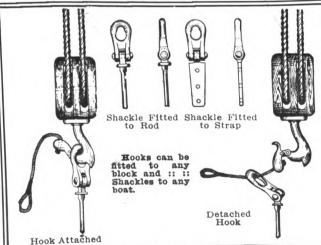
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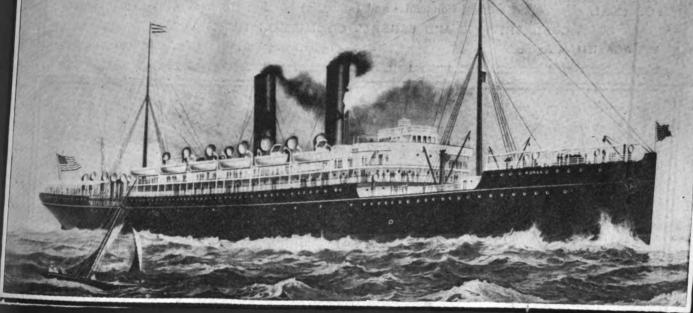
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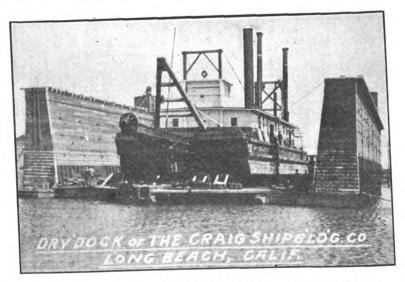
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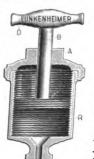
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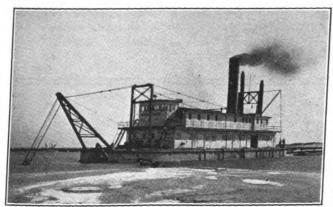
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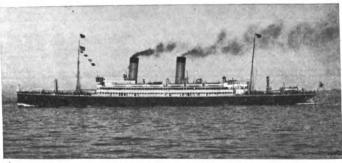
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PACIFIC MARINE REVIEW

VOL. X.

SEATTLE, WASH., APRIL, 1913.

A TASK WELL ACCOMPLISHED

By E. PRANCKE.

To comment on the entire voluminous hearings of H. R. 23673, a title in letters and figures so well known and, alas, so repeatedly printed in these columns, would indeed be an enormous task and require more space than this publication could possibly devote to a matter now of the past.

The discussion of an act to abolish the involuntary servitude imposed upon seamen in the merchant marine of the United States while in foreign ports and the involuntary servitude imposed upon seamen of the merchant marine of foreign countries while in ports of the United States, to prevent unskilled manning of American vessels, to encourage the training of boys in the American merchant marine. for the future protection of life at sea and to amend the laws relative to seamen, has done much to bring about the long needed perspicacity in such important problems.

The many excellent, impartial and widely known men of the American shipping world, known not only in our country but beyond its borders, who so readily responded to the call of the shipping fraternity at large and appeared in Washington, D. C., before the senate committee on commerce, gave their views on this masterpiece of cool confidence and perniciousness and indeed accomplished their task well!

On the other hand, and with all due respect to the chairman and members of the committee on commerce of the United States Senate, these members certainly have had. as never before, a golden and most instructive opportunity to gain a clear insight in sane legislation on maritime affairs.

The Pacific Marine Review in several previous issues has discussed this Seamen's Bill at length, and we now take particular pride in commenting on those from this coast who joined the many experienced men from the East and the Great Lakes regions in Washington, D. C., in a combined effort to convincingly testify against the various unreasonable measures this bill embraced.

The ship of state listed at the time badly, burdened as it was with injurious contraband, the discharge of which brought her again on an even keel. It was in this action of uprighting that our Pacific Coast shipping men so successfully and gallantly assisted.

Captain Robert Dollar, the champion in Pacific coastwise and offshore shipping, as the principal owner and president of the Robert Dollar Company, of San Francisco, representing likewise the Shipowners' Association of the Pacific Coast and the San Francisco Chamber of Commerce, the latter having a membership of 3,300, practically embracing all the activities of our Pacific Coast and of which chamber he is vice-president, truly proved himself the master mind. Captain Dollar covered the large field in its entirety, went modestly and forcibly into every minute detail, and impartially assisted many other members present at this hearing with his wide experience and knowledge, using at times biting and just satire.

Captain H. W. Goodall splendidly represented the Pacific Navigation Company of San Francisco, and, although pressed for time, caused by considerable delay of the hearings at the capitol, brought out strongly and convincingly the detrimental points of the bill, particularly affecting

his company. He made an able showing of the energy, ability and caliber of which he is made.

Mr. R. P. Schwerin, vice-president and general manager of the Pacific Mail Steamship Company, who is considered, and justly so, one of the foremost authorities on American merchant marine affairs, gave on this and many other occasions most beneficial testimony and sound advice for the conduct of the government in maritime matters, which, if heeded in time, can but result to the entire advantage of our pitifully burdened merchant marine.

To comment on Congressman Humphrey's excellent work in this and various other instances would only be the repetition of words of praise and appreciation this publication has always had for the able representative of the state of Washington. Although we cannot agree with Congressman Humphrey's policy relative to the existing rebate system allowed to regular and large merchants as a fair compromise between the interests of steamship owners and merchants, we admire his untiring efforts in many other directions which have justly earned him the fullest appreciation and support from domestic shipping interests as a legislator of remarkable ability and energy. We must bear in mind, with reference to the rebate system, that it requires on the one hand large expenditures to provide transportation facilities in advance of commerce, and on the other hand transportation facilities are required in advance of commerce to create and secure such commerce. Therefore, as long as we are not prepared to replace the existing system with a practical solution of a problem which has puzzled the commercial world for centuries, we should not become over ambitious to strangulate conditions which may not appeal to the indi-

Mr. C. C. Lacey, marine superintendent of the Great Northern Steamship Company, which company operates the S. S. "Minnesota," vividly brought to bear the effect the Wilson bill would have, if passed as originally intended, on the flag of America's largest and most modern passenger and cargo carrier employed in the Oriental trade.

The efforts of Captain I. N. Hibberd, superintendent of the Pacific Coast Steamship Company, of San Francisco, to arouse the interests on this coast and to gather as many representatives of shipping firms as possible in Washington, D. C., must indeed be appreciated. The consistency with which he remained in the capital until the extensive hearings had been completed speaks well of his enthusiasm and staying power. His statements, however, before the committee in connection with the fire on board the S. S. "Queen" years ago, do not look well in print. Short extracts from the hearing follow herewith:

STATEMENT OF CAPT. ROBERT DOLLAR, OF SAN FRANCISCO, PRESIDENT DOLLAR S. S. CO.

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Mr. Dollar. Mr. Chairman and gentlemen, it is rather a remarkable fact that all this trouble and turmoil has arisen on the Pacific coast. We do not hear of any complaints particularly on the Great Lakes or the Atlantic as to our laws and customs, but this has all come from the back door of our country. I did not think we were of so much prominence in national affairs as we are.

Mr. Furuseth has ably put before you all the whys and wherefores, in telling you how to build up a merchant marine. Before I start, I would just make this statement



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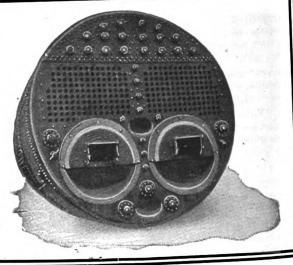
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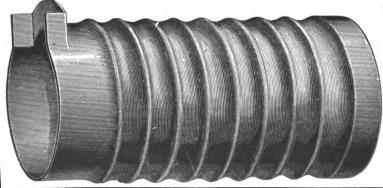
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to you: You have learned that the way to get a merchant marine, and the only way, is to get efficient seamen. He does not talk anything about the ships. It is a positive does not talk anything about the snips. It is a positive fact that no man can buy a steamer today in the United States for double the money that he can buy it for in Europe. It costs double the amount in the American yard that it does in Europe, and you can not get them for double the money. It would appear, from what Mr. Furuseth said, that that does not cut any figure. You take a ship that costs \$250,000 in England, and it costs \$600,000 a ship that costs \$250,000 in England, and it costs \$600,000 The American has to earn interest; he has insurance of 6 per cent, a depreciation fund of 5 per cent, interest of 5 per cent, which makes 16 per cent, on more than half the value of the ship, that the American has to earn before he gets up with his brother across the seas. Under these conditions, is that possible?

Then, in your wisdom, you passed a law-a rider to the Panama Canal bill—permitting me, if I so desired, to change my British ships from the British register to the American register. I went to see the Commissioner of Navigation the other day, and asked him how many applications he had had, and he said not a single one. Why? I can take my British ship that was built in the British yard, a cheap ship, and bring it in here and get the American flag. Why do I not do it? For the reason that American flag. Why do I not do it? For the reason that the moment I attempt to get it, by our regulations here the number of men is so increased—I have not the exact figures, but it is in the neighborhood of \$8,000 a year I ngures, but it is in the neighborhood of \$8,000 a year I have to pay for useless men who are put onto the ship that we do not need when we are engaged in a foreign trade under a foreign flag. You hear a great deal said against Great Britain. Great Britain owns more steamships than all the rest of the world put together, and I think we might concede to them that they know a little about shipping. about shipping.

Senator Fletcher. Is that requirement as to the number of men applicable to the vessels affected by this bill?
Mr. Dollar. No; not by this bill.

Senator Fletcher. Is it a regulation or is it a law? Mr. Dollar. It is by the United States inspection regu-

lations that they put on more men. I could go into de-

Under laws already existing? Senator Crawford.

Mr. Dollar. Under laws already existing; and no nation requires them except ourselves.

I happen to be vice-president of the Chamber of Commerce of San Francisco, and they have also appointed me one of a committee, along with Mr. Swayne, to appear before you. The Shipowners' Association of the Pacific

coast has also appointed us.

Mr. Chairman and gentlemen, you have asked us to present briefs on this bill. I am unable to write one in the legal sense, but will endeavor to give you my views gained from the hard knocks of personal experience, having had to earn my own living since I was 12 years of age. As my credentials show, I represent the Shipowners' Association; also the San Francisco Chamber of Commerce, being their vice-president, and having a membership of 3 200 representing all the activities of our Pacific ship of 3,300, representing all the activities of our Pacific coast. Ordinarily it would be in order to declare either for or against the bill. But it is such a peculiar conglomeration of good and bad that I must take each section in detail. Being a shipowner, no doubt you expect me to be biased against the sailors. In fact, after reading the speeches in the House and in committee showing what speeches in the House and in committee showing what bad men shipowners are, you must be much surprised to see that I am not adorned with horns and the other appendage of his Satanic Majesty. Right here I wish to say I will take second place to no man in my efforts to benefit the condition of the sailors on the Pacific coast, and I want to say that I am very strongly in favor of labor unions. I think we can not get along without them. I want to make that explanation, so that where I denounce I want to make that explanation, so that where I denounce them, where they deserve it, you will know what my convictions are.

wish to say that our crews are the best paid and best fed of any men in similar positions in the whole world. Gentlemen, I hope you will take particular notice of what I have said there, because I intend to prove to you by documents that what I have said is correct. In proof of this I present to you pay rolls of various vessels engaged in the Pacific coast trade. Here are the actual pay rolls. I would like to get them back, if I could, because they are the actual pay rolls. You will see that vessels engaged in what we call the outport business receive \$55 a month,

which with overtime, amounts to \$73.50 a month, and vessels engaged in the inside trade receive \$50 a month, which with overtime, amounts to \$68.50 a month. And they have their bed and board, of course. This is what they actually get. The overtime is excessive over that, and you will find the overtime statements are all here, showing that while on the face of it we might say they get only \$50 a month, it is a fact, on the average of those get only \$50 a month, it is a fact, on the average of those 13 vessels, taken from 13 different shipowners—not all together; they are all different owners and different ships they show that they get \$73.50 a month.

Senator Fletcher. What is regarded as overtime?

Mr. Dollar. Mr. Furuseth told you. I am glad you asked that. He has just told you that we work our men any hours we please. We do no such thing. I have the labor union rules, which I will show later on, showing we can not work our men more than nine hours a day unless not work our men more than nine hours a day, unless when we have them watch and watch.

Overtime is in excess of nine hours, or in excess of their time watch and watch. We pay them 50 cents an hour. In addition to this, I also submit for your considerable. ation the overtime pay rolls, which show how their wages have increased, and taking the average of 11 ships it amounts to 37 per cent, according to the trade—that is, the overtime that they get increases their wages by 37 per cent. This is the actual wages that the sailors are earning at the present time on the Pacific coast. Later on, in the proper place, I will produce a bill of fare showing how they are fed. I make this explanation in regard to wages and board in case you might think that I am using strong language to deny the accusations made against me.

I take this opportunity of saying that I consider it a national disgrace that we have to come all the way from the Pacific coast to try to prevent the passage of a bill that would stifle the little life left in our merchant marine in the foreign trade. On the other hand, what a pleasure it would be to come here and assist in any bill that would really give us a merchant marine. Many bills are presented every session to restrict and make the operation of our ships almost impossible, but none to put us really

back in the foreign trade.

back in the foreign trade.

We are to blame for it, gentlemen. We have paid no attention to it. We have let it go. We have held up our hands in despair and said, "Let them do their best." But this one is so radical and vicious that we could not help but come over in force, as we have done, to present ourselves before you. Otherwise you could have had a walkover, and we would have allowed you to further penalize its ize us,

I do not come before you asking any favor or even assistance for those of us who are giving the best that is in us to promote and develop foreign trade, especially in South America and in the Orient, where one-half of the world has awakened and where the commercial competitors of our nation are doing their utmost to gain supremacy in the tremendous expansion that is going on there in a trade that this country will so much need in the near future. But I do ask that you do nothing to retard or prevent us having an even opportunity with our better equipped competitors who are permitted by their liberal laws to own and operate their own ships and are not hampered or restricted by laws such as this bill which we are discussing.

You hear a great deal of talk about our ships in the for-eign trade. They are utterly gone. There are six steam-ers left on the Pacific ocean to fly the American flag, and those six steamers are owned by American railroad com-If they were not owned by them, they would not be on the ocean, because they could not operate them, and do not operate them, to make their expenses. The railroads are making debt on those steamers, but they are hanging onto them and operating them under the expense of American laws.

Section 4516 provides that in case of desertion or cas-

ualty the master shall reship men, if obtainable.

There is no objection to this, as it is now being done

every day in the week, but the practical working out of this is explained as follows:

I am going to give you some practical illustrations so

that you will understand, probably more clearly, how this bill is going to work.

Senator Burton. Just a minute. (Reading:).
In case of desertion or casualty resulting in the loss of one or more of the seamen, the master must ship, if



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obtainable, a number equal to the number of those whose

obtainable, a number equal to the number of those whose services he has been deprived of by desertion or casualty, who must be of the same or higher rating.

Mr. Dollar. That is the law. The steamer "Rival," which I owned, was running from San Francisco to Willapa, at that time a small village of no consequence. The captain neglected to sign on his crew, and on arrival he was informed by the crew that they were all leaving and demanded and received their pay. He got his steamer loaded by stevedores, but when he got ready to sail he discovered there was not a sailor nearer than 50 miles except the ones that left. They demanded and received twice as much for the return voyage as he had paid on the up trip. This is only one of the multitude of difficulties that American shipowners have to contend with.

The next is, that the sailors shall be divided into the The next is, that the sailors shall be divided into the watches. This I strongly object to, as on the Pacific coast we carry big crews for either stevedoring the cargo or in long voyages to keep the ship in good repair. In foreign countries in cargo ships of, say, 3,000 tons, DW, six sailors only are carried. In fact, in similar steamers our inspection requirements only call for us to carry this number. In this case watch and watch is all right, three men on and three men off one at the wheel one on the men on and three men off, one at the wheel, one on the lookout, and one to spare. But we carry double this number. This is where the injury is going to be wrought on us who are carrying big crews, because we have to keep those men watch and watch, and we lose a half of their labor.

I produce the pay roll of the small cargo steamer "Riverdale," showing she carries 13 sailors; the "Charles Nelson." carrying 11. There is hardly a vessel that does not carry many more than the regulations require. passenger and mail steamers calling at ports at short distances apart this law would prohibit them maintaining a schedule. If we look at it strictly from the sailor's point of view this would work against themselves, as instead of carrying double the crew that is required by the ship's articles we would cut the crew down to what is exactly required by law thereby running with many more exactly required by law, thereby running with many men less.

In the failure of our officers to enforce discipline a very serious condition has arisen on the Pacific coast. Some thing has been said about discipline and you are going to hear more of it before you get through. It is almost impossible, working under labor-union conditions, such as we have out there, to maintain discipline on our vessels. We have gone into hysterics about saving the lives of people after we get them into the water forsooth. We have done nothing to attempt to keep them from getting in the water. Even our navigation laws are antiquated, and they are not up to date in the building and equipping of our vessels, excepting life-saving appliances, and we lead the whole world when we get the people into the water in taking care of them. On all foreign ships the lookout man stands on the forecastle head, being the best position to see ahead, and when the bell on the bridge sounds the hour—you know, the bell on the bridge sounds every half hour—the lookout on the forecastle also rings the same number, looks at the lights, and calls out to the officer on the bridge and reports their condition.

Our sailors on coastwise cargo steamers have posi-

tively refused to do this, saying it is a reflection on American manhood, as it is equivalent to letting the officer know they are not asleep. The men tell us they are backed up in this by their union. Then they refuse to stand on top of the forecastle, but stand abaft it, at what is called the break of the forecastle, where they are sheltered, but can see nothing. Not long ago on one of my steamers the captain told me it was impossible to get a proper lookout kept, and suggested that I get up when he called me and he would show me the lookout asleep. He was as good as his word, and at 2 a. m. I saw the lookout was sound asleep on a bench in the forecastle.

I am very sorry to make those statements to show the condition we are running our vessels in, but we can not help it. You might say, why do you not flog them? If we started in to flog them we would have an eternal lawsuit with the labor unions out there, because the man would be the started in the labor unions out there, because the man would be the same than the labor unions out there, because the man would be the same than the labor unions out there, because the man would be the same than the labor unions out there, because the man would be the same than the labor unions out there, because the man would be the same than the labor unions out there is not the same than the labor unions of t would sue us for his wages and the suit would be defended

by a labor union, and instead of being a shipping business we would have to go into the lawyer business.

Mr. W. S. Brown. Was the case of that man being found asleep at his post there just after he had made a lot of this overtime:

Mr. Dollar. It was 2 o'clock in the morning.
Mr. Brown. He had probably been out all night doing that overtime you have told us about?
Mr. Dollar. The ship was at sea a whole day, if that

is what you want to know. This was the second day out,

so there was no overtime.

Mr. Furuseth. If I may be permitted, I would like to ask whether Capt. Dollar has ever been told by me or by any other official of the union, that the union would despend to the property of the property of the property. fend any man accused of going to sleep on the job or failing to do his duty on board of a vessel?

Mr. Dollar. No; but the men have told me. Mr. Chairman, the time is very short-

Senator Burton. There is not much more time, and you are entitled to two or three minutes over.

Mr. Dollar. I would ask you gentlemen to take a paper, and I would be very pleased to answer questions you may make a note of. That is for the sake of expediency or

getting through faster.

The steamers "Noyo" and "San Pedro" had a collision on a fairly clear night on the ocean, and on both steamers the lookouts were asleep. I owned one of them, and I investigated one myself thoroughly, and I know one of the men was asleep; and, worse than that, the officer in charge of my sloop was in the saloon taking a cup of coffee, and I believe the man at the wheel on my ship was very drowsy. I would not wonder that he was asleep, too. So that we were running that ship without a single

person awake on the ship.

Senator Burton. Had they been overworked? Had they been up for unusually long hours?

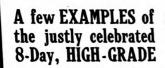
Mr. Dollar. I would have to look up and see when the steamer sailed to be able to tell you that, Senator. I remember the case of the other one, but I do not remember whether that was the case here or not. This same "San Pedro" collided and sunk the steamer "Columbia" on the 21st of July, 1907, and it was reported at the time that the lookout was not at his post. I can not, however, vouch for this. Eighty-six lives were lost. On one of my steamers on which I was traveling the captain ordered fire and life-boat drill. The men refused, saying it was Sunday and unnecessary, and used language to express their disapproval which I would be ashamed to use here. The only way he could have compelled it was with his The only way he could have compelled it was with his revolver or fists. On my advice he gave up fire drill. Gentlemen, this bill will cause much worse discipline than union is in hysterics about the saving of life at sea by small boats. What could they do better than to command discipline of their men, thereby lessening the risk of collisions, obviating the necessity of using lifeboats?

Section 4529 provides that after completion of the voyage the men shall be paid in two days after discharge. This is an unwarranted slur on shipowners, which I resent, as no man has ever to wait an hour after the banks open and the service of a shipping com-missioner can be obtained. Instead of two days, I sug-gest making it three hours after the bank opens and the service of the commissioner can be obtained. This clause is evidently put in to gain sympathy—to show that we do not pay promptly and keep our men waiting for their money.

Section 4530 provides that half his wages shall be paid at every port where the vessel touches. Mr. Wilson, or rather Mr. Furuseth, could not have devised a worse provision for the American sailor than this, as I am quite safe in saying that 90 per cent of them drink every cent they have outside of the bare necessities of life. The custom at present is for the captain to give any member of the crew as much money as he requires except to spend on liquor. This law carried to its logical conclusion means having a veritable hell upon earth at every port. I beseech you, gentlemen, do not be a party to this disgraceful provision to further degrade the men and bring untold trouble and loss to the owners of American ships. By suggesting the foregoing, Mr. Furuseth has sacrificed the best interests of the American sailor to bring about the last part of the paragraph, namely, that this section shall apply to seamen on foreign vessels. The meaning of this is quite plain that no matter what contract a foreign seaman makes, this act shall supersede and set it aside.

Gentlemen, do you understand thoroughly what this means? It means that any contract that a sailor may make in a foreign country is abrogated when he comes





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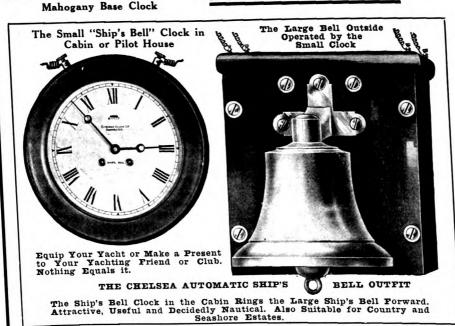
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"MAKES US WHO ARE IN THE FOREIGN TRADE THROW UP OUR HANDS IN DESPAIR"

here. It is a provision for a breach of contract by any sailor coming to this country. The foreign crews on arrival shall be informed that they can demand and get half their wages and that the American government shall protect them in deserting, and by joining the sailors' union they can get double the wages. All trusts are bad, and if you approve of this clause you are giving the sailors' union the privilege of operating under the law the biggest trust in the United States. Representing over 3,000 merchants of the Chamber of Commerce of San Francisco, who are not interested in shipping. I protest against the passage of this clause. Outside of the trouble of changing some 21 treaties, causing ill feeling between foreign nations and ourselves, it will seriously affect the carrying of our products by materially increasing the rate of freight and causing the dear American public to foot the bill, as we will have to depend on foreign ships to move our products in the foreign trade for many years to come. At the present time there seems no hope whatever of American shipowners being put on a fair competitude of the state of tive basis with other nations. In fact, a mission such as I am now on before you makes us who are in foreign trade throw up our hands in despair.

Section 4559 provides that in the event of the crew thinking a vessel unseaworthy, a survey can be called by them. This puts it entirely in the hands of the crew to tie up any vessel. This clause should be left as it is, namely, that the crew and one or more officers may make the complaint.

Section 2 provides for larger accommodations for the crew. There is no objection whatever to this, as I do not think there is a vessel running on the Pacific coast that has not the space provided for in this section.

The last clause provides for washing places. There is no objection to this, provided that not more than what

is actually required shall be provided.

Section 4596 provides, first, desertion. The sailor forfeits what clothes he was fool enough to leave on board and the wages due him. Did you ever hear tell of a sailor deserting and leaving his clothes behind him? If

you have, I have not.
On American vessels this money does not come, as you are led to believe, to the shipowner, as he has to pay it over to the shipping commissioner, who, in turn, hands it over to the Marine Hospital Service for the use of sick seamen. You have been told, I see by the Congressional Records, that the shipowner gets the benefit of this money. We do not get the benefit of it. We can deduct from the sailor's wages the cost of procuring a substitute, but the balance must go to the shipping commissioner, who, as I just said, hands it over to the government for the benefit of cick common. fit of sick seamen.

Senator Nelson. See if I understand that. If a sailor deserts and has considerable wages due him, out of that balance due him is first deducted the extra amount it will require to get a man in his place?

Mr. Dollar. Yes, sir.

Senator Nelson. And the balance goes to the government?

And the balance goes to the government Senator Nelson. So that the shipowners are absolutely out of it—I mean, it comes out of their pockets?

Mr. Dollar. When we present the shipping articles to a commissioner the bill is made out, and we have to produce and give him the actual amount of money that is required. Then he distributes it to the men or the government as the law provides.

Senator Burton. By the way, it would be well to have some copies of those shipping articles here before the committee. Mr. Chamberlain will not be here today, unless here. less he is called.

Mr. Dollar. This story has always been told on one side, and the other side has not been told. This, I think, is the first opportunity when the shipowners have earnestly attempted to put before you their side of the case.

Section 2 provides a fine of two days' pay. So, if he were away three days he would be one day ahead during the time he is away, as his wages go on when he is away. You know, a sailor's wages go on. So I do not know what that provision was put in for. I suppose it was put in to try to fool you gentlemen to believe that the sailor is going to be penalized by paying this fine, which he is not.

To the third, fourth, fifth, sixth, seventh, and eighth provisions we have no objection whatever.

I wish to call your attention to this, gentlemen, that there is a great deal in this bill to which we have no objection at all. In fact, its of no particular importance to us.

Senator Crawford. Which ones were those?

Senator Crawford. Which ones were those:
Senator Burton (reading):
For quitting the vessel, without leave, after her arrival at the port of her delivery and before she is placed in security, by forfeiture from his wages of not more than one month's pay.

Section 4596 prescribes the penalty imposed upon seamen for dereliction of duty, desertion, leaving without permission, etc. The two to which Capt. Dollar has objected are, first, for desertion, and second, for neglecting or refusing, without reasonable cause, to join the vessel, etc.; third, for quitting the vessel without leave after her arrival at the port of landing.

Senator Crawford. Does he object to that?

Senator Burton. You do not object to three, as I under-

Mr. Dollar. No, sir. Senator Crawford. But you do object to the first and second?

Mr. Dollar. Yes, sir.
Senator Burton. Four is imprisonment for willful disobedience to any lawful command at sea; five is for continued willful disobedience; six is for assaulting any master or mate; seven is for willfully damaging the vessel or embezzling or willfully damaging any of the stores or cargo; and eight is for smuggling. Those are the things to which no objection is made.

Mr. Dollar. Now we come to section 8. We are entirely in favor of this clause abolishing flogging.

Senator Burton. One thing I want to ask there of both sides: What is the meaning of the language, on page 13, sides: What is the meaning of the language, on page 13, "Flogging and all other forms of corporal punishment are hereby prohibited"? They have been prohibited, and are under the present law. What do you mean by other forms of corporal punishment? Suppose a mate or a master orders some seaman to do something and he does not quite comply, or he offends the officer, and the officer beats him; is that corporal punishment? Or must it not be some specific form of punishment, such as the old way— putting in the stocks. I do no know that that is corporal punishment. But flogging is one form of corporal pun-ishment. What other forms of corporal punishment are there?

Mr. Dollar. I take it this means more particularly put-

senator Burton. Is that corporal punishment?

Mr. Dollar. I take it that that is what it means.

Senator Burton. I do not know that I had better raise that question, but as soon as you are through reading I will take that up further, to see what is the scope of it.

Mr. Dollar. We are in favor of abolishing all manner

of corporal punishment.

Section 9 provides that more water and butter shall be furnished to the men. We are quite in favor of this. But I can not help thinking this was put in here to gain sympathy, as it is entirely uncalled for, as no American vessel that I know anything of feeds their men on what we call the congressional scale. To show the absurdity of this section, herewith is the bill of fare adopted and in use on section, herewith is the bill of fare adopted and in use on all Pacific coast steamers. I produce here, Mr. Chairman, the bill of fare that is nailed up on all our ships on the Pacific coast, which was very strenuously objected to by Mr. Furuseth, in the first place, and the crew in a great many instances have torn this down. They do not like to see it. This was a modification. We were forced into having this modified form of a bill of fare. They demanded three kinds of meat for every meal, which we thought entirely out of reason, and we substituted this bill of fare, which they afterwards accepted. I will not take up your time to read it other than to just read one day.

(The bill of fare referred to is printed in full in the record, as follows:)

CREW MENU.

CREW MENU.

(When stores or market will not permit of items mentioned below, substitutions will be made.)

Sunday—Breakfast: Rolled-oat mush, ham and eggs, jacket potatoes, hot cakes and syrup, bread and butter, coffee. Dinner: Oyster soup, roast beef, lamb stew with green peas, string beans, mashed potatoes, pickles, bread and butter, coffee, plum pudding with sauce. Supper:

"HAVE BEEN ACCUSED OF SO MUCH AND HAVE NEVER DEFENDED OUR POSITION"

Beef-steak and onions, fried potatoes, sliced tomatoes, bread and butter, ginger bread, fruit, tea.

Monday—Breakfast: Fine hominy, salmon bellies or tongues and sounds with drawn butter, jacket potatoes, meat stew, hot rolls or biscuits and butter, coffee. Dinner: Vegetable soup, roast pork with apple sauce, boiled beef (Spanish), boiled potatoes, stewed lima beans, bread and butter, sago pudding, coffee. Supper: Mutton chops, sausage, baked potatoes, bread and butter, stewed prunes,

Tuesday—Breakfast: Corn-meal mush, liver and bacon, jacket potatoes, hot corn bread, hot cakes with syrup, coffee. Dinner: Pea soup, corned beef and cabbage, codfish with pork scraps, cauliflower, jacket potatoes, pickles, sliced tomatoes, rice and raisin pudding, coffee. Supper: Hamburger steak and onions, fried potatoes, pork chops, fresh or canned fruit, cake, tea.

Wednesday-Breakfast: Rolled-oat mush, beefsteak, jacket potatoes, hot rolls, coffee. Dinner: Tomato or rice-tomato soup, roast or boiled mutton, meat curry and rice, potatoes, stewed corn, pickles, mince pie, coffee. Supper: Chops, corned-beef hash, fried potatoes, tomatoes, stewed peaches, cake, tea.

Thursday—Breakfast: Rolled-oat mush, ham and eggs, boiled potatoes, hot corn bread, hot cakes with syrup, coffee Dinner: Bean soup, pork and beans, veal fricassee, mashed potatoes, string beans, brown bread, pickles, plum pudding, coffee. Supper: Hamburger steak with onions, corned-beef hash, fried potatoes, fruit, cake, tea.

Friday—Breakfast: Mush, veal cutlets, jacket potatoes, hot rolls or biscuits, coffee. Dinner: Clam chowder, codfish (family style), baked macaroni, jacket potatoes, bolled onions, mashed yellow turnips, bread pudding, coffee. Supper: Pork chops, codfish hash, baked potatoes, sliced tomatoes, stewed apples, cake, tea.

Saturday-Breakfast: Mush, chops, potatoes, hot corn bread, hot cakes, coffee. Dinner: Soup, corned beef and cabbage, curried meat and rice, green peas or corn, boiled potatoes, apple or squash pie, coffee. Supper: Beefsteak and onions, corned-beef hash, fried potatoes, stewed prunes, cake, tea. Lunch (when working cargo, 9 a. m. and 3 p. m.): One kind of cold meat, cheese, bread and butter, coffee.

Bread to be served at all meals except when hot rolls are served.

When in port, fresh fruit to be served when obtainable: also fresh vegetables when in season.

Then there is a clause at the foot of this which provides that "When in port, fresh fruit to be served when obtainable; also fresh vegetables when in season." They come before you, forsooth, and ask you to give them just 1 ounce of butter and another quart of water, when we are

giving them this, actually giving them this.

This they can not contradict. I have several copies here of this bill of fare, which you can see.

Then, in addition, I have another thing I want to read.

There would be no use of my making the bald statement to you of what I am going to read, for I could not possibly ask you to believe what I am going to tell you. Therefore I read from the rules of the sailors:

Coffee shall be served to the regular ship's crew at 9

a. m. and 3 p. m.

a. m. and 3 p. m.
That is in addition to that bill of fare. Now, coffee means sandwiches and cake, or light refreshments, at 9 o'clock in the morning and 3 o'clock in the afternoon. And then, to cap the climax, the cooks come at us and say this to us—these are their rules which we have to obey:

The hour of 5 p. m. to be the last meal hour in all

ports; for every hour postponed overtime to be paid.

How would you gentlemen like it, if you got home at night and the cook informed you that the labor unions had instructed him to tell you that the last hour of your meal is going to be 5 o'clock at night, and if you were not promptly on time, they would fine you by charging you overtime? That is the condition, gentlemen, under which we are working. I suppose you might say I should be ashamed to come before you and tell you of such servitude that the employers of labor are put into on the coast. But, as I said, probably if I made those statements to you offhand you would say I must be mistaken.

Senator Nelson. Whose rules are those?

Mr. Dollar. The rules of the sailors' union and the cooks' union. I submit that for your further considerahad instructed him to tell you that the last hour of your

tion, and I wish you would just look those over and see whether the poor, downtrodden sailors are not getting a square deal. In fact, I would ask you to see if the shipowners are getting a square deal. Judge impartially be-tween them, and you will see the terrible position that the American shipowners have got into, so much so that we are absolutely down and out in the foreign trade when we come in competition with anyone else. Of course, in the domestic trade we have our recourse, and as the screw is tightened on us we tighten the screw on the dear American public, and we make them pay for us. Hence the cost of moving freight on the Pacific coast has got higher than in any other part of the world, and the ship-owners are not making any more money.

You will see that this bill of fare is as good as any that we have at home, providing as much as any man can eat and without any limit. In view of this, the asking for one ounce more of butter and one quart of cold water I consider a huge joke and only for the purpose of throw-

ing dust in your eyes.

Seeing that we have been accused of so much and have never defended our position, it might be as well to talk plainly to you. In addition to this elaborate bill of fare I read from the sallors' union rules on page 8, section 13. That coffee shall be served at 9 a. m. and 3 p. m., and when crew are working overtime, meals shall be served at 9 p. m., midnight, and 3 a m.

So you can all see that the downtrodden starved sailor

has more meals and more to eat than any class of men in this country. They have five regular meals a day when they are in port. Also bear in mind that all work is suspended during all of those meals.

Gentlemen, that is what we are up against. The hour of 5 p. m. to be the last meal hour in all ports, and for the statement of t

hour postponed overtime shall be paid. How would you like, on going home at night, to be told by your cook that your last meal hour had been fixed by the union at 5 p. m., and if you were not promptly on time he would fine you 50 cents an hour. Gentlemen, that is what we are up against. Shall I call it by its proper name, union labor tyranny?

Section 10a provides that no advances shall be made on shipping sailors except as provided. It would work a great hardship on a man who has a family in a distant part of the world, as it would be impossible for them to appear before the commission, as every month in my office we are sending money to families in different parts

of the world. So this should be changed.

Section 4611 is Section E. This section provides that it is applicable to all foreign ships, and if not complied with clearance will be refused. And as all allotments on foreign ships are to their families in their home land, or the section of the s and as they can not appear before the commissioner as provided for, it follows that no money can be sent to support their families. This is so arbitrary and drastic that no doubt you will change it. no doubt you will change it.

Section 4536, section 11, prevents the attachment of

wages. There is no objection to that.

Section 12 provides that a certain per cent of the crew shall understand the orders of the officers. Every ship has a certain number of men who understand the orders and they communicate them to the others, otherwise the ship could not be navigated. And if the test were made on nautical terms or orders about the ship, it would work no hardship on American structures the ship, it would work no hardship on American vessels, but it would if the examination is to be conducted by a labor delegate, as recently exposed in the House of Commons, England, where the delegate asked a Greek fireman, who was not a union man, to name the three principal ports in the Black sea; he could not do it and a man the sea; he could not do it and was rejected. So if this section is ne could not do it and was rejected. So if this section is adopted, some reasonable method should be set forth so any man not a member of the sailors' union would be rejected. The loss of the "Rio de Janeiro" has been cited as a cause for this law; but if the truth were told, no man could have gotten out her boats, as the vessel got on her beam ends as soon as she struck, and while the crew was blamed for the excessive loss of life, the real cause was in our laws not prohibiting a shin from carrying paswas in our laws not prohibiting a ship from carrying passengers without a double bottom and not having her bulk-

heads run up to her main deck.

Another very important reason for her careening over and getting on her beam ends was that her bulkheads ran only to the first deck of the ship and that compartment immediately filled, and it is a positive fact that the engine room and the fireroom filled from the top, not from the

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"NOW WE ARE REDUCED TO SIX AMERICAN VESSELS ON THE PACIFIC COAST"

bottom; the water rushed in through between decks and went down into the engine room and filled her from the top. Our laws only provide for the bulkhead to go to the first deck. This is wrong, as the engine room was flooded from above and not from below. This was true of the "Titanic" to a certain extent. If she had had a double bottom likely all would have been saved. I need not say "likely"; I am positive all would have been saved. As this part of the section reads, I am opposed to it as being unnecessary. Especially is it unnecessary in cargo steamers, and it would compel owners when employing Chinese ers, and it would compel owners when employing Chinese crews to also employ Chinese engineers and officers as they can be got, but up to the present all British steamers carry white engineers, even if they carry Chinese, Lascar, or Japanese crews. The Japanese have dismissed all their white engineers and officers, so now their entire crews are Japanese. Therefore it will not affect them, and also as the desertion of their crews would be prevented by our immigration authorities; so the very nations that this bill aims to hurt will come off scot free.

I produce an officers' pay roll on one of our Americanowned British registered ships, showing that we are paying our officers the full American wages.

Per	month.
Captain	\$200.00
First officer	
Second officer	75.00
Third officer	55.00
Chief engineer	150.00
Second engineer	
Third engineer	
Fourth engineer	

Whereas the regular British wages are only about half. If this section goes through it will compel us to discharge our American officers and hire Chinese engineers and officers at less than half the wages. I ask, who will be benefited?

We have left the enormous fleet of American ships on the Pacific coast of six vessels. We are down to that, and in the recollection of nearly everyone in this room the majority of the Chinese trade was done in American bottoms. Now we are reduced to six vessels. What will be the working out of it? I will show you. The vessels that are left are owned by railroads. If they were not owned by railroads they would not be there, because all of us who have had our money in American vessels in that trade have been compelled to get out, for the reason that the loss was so great we could not stand it. The railroads evidently are able to stand the loss, because the that the loss was so great we could not stand it. The railroads evidently are able to stand the loss, because the Pacific Mail have got five vessels left and the Great Northern Steamship Co., commonly called the "Jim Hill" line, has one left. What is going to happen? By our laws they have to have American officers. The American officers do not understand the Chinese language. Therefore when it comes up to the language test the crews will not be permitted to depart from our country. They are running in direct competition with the Japanese lines. The Japanese lines have a subsidy which is nearly equal to the operating expenses—not quite, but very nearly. This bill is aimed, probably, to get at them. No doubt it is framed for that purpose. How will it work out? A Japanese ship comes into our ports; the master can be compelled to pay the crew half their wages. But when the men come to desert, the immigration officer says, "No; you don't," and they compel the Japanese line to put up a bond of \$500 for every man they bring in. Therefore they will see to it that the men do not desert, and the immigration Department will also see to it that they do not desert Therefore the men will be kept on board the ships. Then when it comes to the language test, inasmuch as the Japanese ships are officered by Japanese citizens, they understand the language of the officers. Therefore the Japanese ships are going to go scot free, and you, forsooth, are going to legislate the remaining six American ships off the Pacific Ocean. That is how this is going to work out. I may say that I have Chinese crews on my ships. This bill does not interest me at all, because my ships are British ships, and all I have to do is to employ Chinese engineers in the engine room; and, also, the Japanese will go scot free; but the American ship will be penalized. I wish you would bear that in mind in arriving at a decision on this matter.

Senator Burton. What do you say as to this provision applying to foreign as well as domestic ships: "That no

Senator Burton. What do you say as to this provision applying to foreign as well as domestic ships: "That no

vessel, except those navigating rivers exclusively except as provided in section 1 of this act, shall be permitted to depart from any port of the United States unless she has on board a crew not less than 75 per cent of which, in each department thereof, are able to understand any order given by the officers of such vessel," etc.?

Mr. Dollar. I have just tried to explain that, Senator, that in Japanese ships they will be protected, and in my own ships all I have to do is to employ Chinese engineers.

Senator Burton. Take your British ships. You say it

does not interest you because you have British officers.

Mr. Dollar. I ship the British officers in Hongkong,
which is a British colony, and the Chinese there are British subjects.

Senator Burton. Do the British officers understand the Chinese language?

Mr. Dollar. The Chinese will.

Senator Burton. What is that?
Mr. Dollar. The Chinese officer whom we will employ.
Senator Crawford. The engineer will be a Chinese officer and he can give these orders?

Mr. Dollar. Yes.
Senator Burton. This is the main point; you understand this applies to all ships of all nations?
Mr. Dollar. I understand that; and therefore I am trying to explain how it is not going to reach the ships of other nations; but it is going to reach the American ships. That is the point.

is the point.

Senator Burton. What prompted my question was your reference to a British ship and British register there. If they were British officers who did not understand the Chinese language, it would be a violation of this provision here; but that is not necessary to be discussed. Go ahaed.

here; but that is not necessary to be discussed. Go ahaed.

Mr. Dollar. I am quite clear on that point, Senator; I have looked into it. I wish also to say that our British ships, so called, are entirely owned by American citizens, and there is not a dollar of British money in the ships. The money that is in those ships is entirely American money, and we run them with American officers having British certificates. I produce an officers' pay roll on one of our American-owned British-registered ships, showing that we are paying our officers the full American wages, starting in with \$200 for the captain and \$150 for the engineers.

Senator Nelson. Can the officers on those ships get licenses to act as officers and masters unless they are British citizens? Do they not have to forego their American citizenship?

Mr. Dollar. No. The British are lenient in that regard. A man, when he gets his certificate, must be a British subject, but he can subsequently take out American Under the American law, if a man has British papers and then takes out American papers, he must forfeit the others.

Mr. Brittain. Mr. Higgins here, an American-born, holds a British chief engineer's certificate.

Mr. Higgins. That law has been changed since I got

Mr. Higgins.

my certificate.

Mr. Dollar. There are several in the room here, prob-

ably, at that.
Senator Nelson. In the first instance, the man must be a British subject to get his license?

Mr. Dollar. Primarily he must. The Chinese citizens of Hongkong are British subjects; therefore, they can get

their papers.

Mr. Smith. That is a recent law, then, is it not? Only a few years ago an American-born citizen could go to

England and get an engineer's certificate.

Mr. Dollar. Yes. But that has been changed.

Mr. Brittain. Mr. Higgins was an American born and an American citizen, and he got a British chief engineer's

an American citizen, and he got a British chief engineer's certificate.

Senator Crawford. But you can not do that now.

Mr. Dollar. I bring this matter up here about wages for a purpose. We are paying full American wages, and we insist on our men living on the Pacific Coast, so that every man we have on board our ships is practically an approximate the particular pure and simple.

every man we nave on board our ships is practically an American, pure and simple.

Senator Nelson. If you are paying American wages and you give American board to your sailors, then the cost of operating those vessels that you sail under the British flag must be as great as operating American vessels, must it not?

Mr. Dollar. This board here is for the ships I happen to own. I did not explain that. I happen to own American



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"THAT IS ONLY ONE OF THE REASONS WHY I SAIL UNDER THE BRITISH FLAG"

ships engaged in the coastwise trade, and this bill of fare I presented is on our coastwise ships. You can not consider this thing as a whole; you must consider all the different kinds of ships.

Senator Nelson. I asked you the general question, without any regard to that bill of fare you produced. Do you mean to say that on those vessels you sail under the British flag, backed up by American capital, you pay the same wages to your sailors and give them substantially the same food as they do on American vessels in the foreign trade?

Mr. Dollar. I thought I had made that clear, Senator. Senator Nelson. Do I understand that to be the case?

Mr. Dollar. I am very glad you brought that up. We are running our ships with Chinese crews—our foreign ships—but British certificated officers who are American citizens.

Mr. Goulder. When you said you paid your men, you referred then to the officers?

Mr. Dollar. Yes; I produced an officers' pay roll.
Senator Crawford. But you are not paying your Chinese
sailors what you would pay American sailors?
Mr. Dollar. No; not by any means.
Senator Nelson. That is one of the reasons, then, why

Senator Nelson. That is one of the reasons, then, why you sail under the British flag, is it not—because you em-

ploy these foreign sallors?

Mr. Dollar. Yes; that is one of the reasons—only one.

There are a great many reasons. Another is, when this rider was put onto the Panama Canal bill a few months

ago, that no man owning a foreign ship has taken them off and put his ship under the American flag.

Senator Nelson. Do you think it is very patriotic for an American citizen to take his capital and sail under a

foreign flag?

Mr. Dollar. I do, when you, by your laws, prohibit me from operating my ships; I say it is right, quite right. If I come to you with a proposition to put your money into American ships, and I show you that you would make 30 or 40 per cent loss every year in that ship, would you do it?

Senator Nelson. You reduce you patriotism to a matter

of dollars and cents—the almighty dollar?

Mr. Dollar. Exactly so, when we are prohibited from operating our ships; and the proof of that is that they have gone off the ocean. We need not discuss the American ships in the foreign trade; they are down and out.

As I said before, if this section we have been discussing goes through, it will compel us to discharge our American officers and hire Chinese engineers and officers at less than half the wages.

Senator Nelson. I should not think you would object to that, as long as you are doing that in these vessels under

the British flag.

Mr. Dollar. We have business reasons why we do not

I am also opposed to the latter part of this section, providing that two able seamen or better shall man each boat. It should read two able boatmen who are capable and understand the handling of a boat, as it is an erroneous idea that because a man is an A B seaman he is a good boat-He may have served years on a steamer and never been in a boat. On the other hand, fishermen or farmers brought up near the water, who have had experience from their youth handling boats, are much better. Recently we took a census of several cargo steamers and found 90 per cent of the crews, including sailors, firemen, cooks, and stewards were able to handle a boat. Unfortunately the sailors' union found out what we were doing and put a stop to it. So no more information could be gotten. Japanese and Chinese are much better boatmen than Europeans, as many of them are actually born on boats, and their could be spent in small boats. At Canton clone their early life is spent in small boats. At Canton alone over 500,000 persons live entirely in boats. So I am in favor of all the crew being classed as boatmen who are competent boatmen.

This section provided that they shall have three years experience before they are to class as A B. In the old days of sailing ships this was necessary, but on the modern steamers such experience is altogether unnecessary. A sailor now is a man who washes decks, scrubs paint work, and does any work that any ordinary laborer can do. He does not require the skill to go aloft, as modern vessels carry no sails. So, on the modern steamers, I am opposed to seamen having certificates, as the real object of it is to put the entire shipping of sailors by law into the hands of the sailors' union, who in time of a strike could effec-tually tie up the entire shipping of not only American but

all foreign ships. To give one man the power to do this is so dangerous that I ask you to think it over thoroughly before creating such a monopoly.

A determined effort has been made to impress the public with the fact that the so-called efficient seaman is all that is required, and also that life-saving appliances is the great essential on board a ship. All this is very good when the wreck occurs, but would it not be better to safeguard the lives of crew and passengers by providing rules so that the captains and officers could preserve and compel better discipline on board of their ships, rather than make laws that will have the effect of lessening discipline?

Mr. Furuseth. May I ask the gentleman a question? He uses the word "discipline" continuously. I would like to have him define what he means by "discipline." Senator Crawford. We have to take a recess here.

Senator Burton. Gentlemen, we ask you to be here, say, 15 minutes after 11. It is possible we will not be able to

return—indeed, probable—but I think the chances are that we can return 15 minutes after 11 and resume this hearing.

Thereupon, at 10:50 o'clock, an informal recess was taken until 11:15 o'clock, after which the subcommittee

taken until 11:15 o'clock, acceptoroceded with the hearing.

Senator Burton. You may proceed, Capt. Dollar.

Mr. Dollar. I was talking on how this bill would work the event of a strike. Here comes the most vicious collector of customs shall the customs are customs and customs are customs. upon the sworn information of any citizen cause a muster

of the crew and withhold clearance.

It would work out this way, following the usual tactics: They would wait until the ship was ready to clear, say at 3 p. m. One man would swear that he thought that there were not enough A B sailors or some who could not pass the language test. The ship would be held up till next day. The informers would disappear, with the result that the owner of the vessel would be left to foot the day's

delay to his ship.

To illustrate a case in point: On October 22 last, the San Francisco papers stated that the steamer President with 500 passengers on board was ready to sail at her schedule time the day before, 2 p. m., when Mr. Flynn, the president of the firemen's union, arrived on the scene and ordered the firemen out, holding up the sailing of the vessel for four hours, when Mr. Flynn graciously permitted it to depart with her exasperated passengers.

Putting such power into the hands of one irresponsible man would be driving the shipping from our shores, or if the ships came they would be sure to get a high enough rate of freight to recompense them for all those unreasonable and unjust exactions. We then would be in the same class as Australia, that is now penalized by all shipowers to pay a higher rate of freight than any other nation on account of the receivers of their labor unions. No tion on account of the exactions of their labor unions. No man will send his ship to Australia today, gentlemen, at the same rate of freight as he could get elsewhere.

Section 13 provides that ships shall carry apprentices. This all shipowners will favor. In theory it is fine; in practice it works out as follows: Six years ago when I was president of the Steamship Association of San Francisco, we got up a plan that at first looked as if it was going to be a great success. But on account of the antagonism of the sailors it proved a disputal failure. Herewith onism of the sailors it proved a dismal failure. Herewith

is a copy of the articles of apprenticeship.

The apprenticeship rules are copied in the record in full,

as follows:

APPRENTICESHIP RULES, SHIPOWNERS ASSOCIATION ON THE PACIFIC COAST.

(Ferry Post Office Building, San Francisco, Cal.) How boys of American parentage or who are entitled to American citizenship may become apprenticed to vessels plying in the American merchant marine under the following conditions and rules:

CONDITIONS.

. By the written consent of parents or guardian.

2. Must furnish to Shipowners' Association of the Pacific Coast good references.

3. Must be of good physique and moral character.
4. Must be not under 16 years of age.
5. Must have a fair school advention.

5. Must have a fair school education.
6. Must sign a contract to faithfully fulfill the period of apprenticeship of three years and to obey all lawful orders of superior officers.

RULES.

1. Upon receiving their appointments as apprentices will



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be assigned to vessels through the secretary of the Shipowners' Association of the Pacific Coast.
2. Will berth and mess with the officers.

Will receive training in seamanship, navigation, and

in all duties pertaining to sea life.

4. Will not be called upon to perform any service in stewards' department.

5. Will be granted two weeks' shore leave each year on

full pay

6. Will wear a uniform of navy blue, single-breasted coat and trousers to match for dress, blue cap with device worked with the colors of the association or company; blue sweater and overalls for undress uniform. Will also wear one stripe on the arm for each year of service—i. e., the first year one, the second year two, the third year three stripes. One dress uniform and two pairs of overalls will be furnished each year by the owners, to remain the prop-erty of the owners; balance of clothes must be furnished

by apprentice.

7. Will receive a monthly salary of \$20 first year, \$30 second year, \$40 third year, with a bonus of \$250 for good behavior at the expiration of three years' apprenticeship.

8. Will be given certificate of discharge and transfer from one vessel to another, made out by captain of the vessel, certified to by secretary of the Shipowners' Association.

9. Will be given final certificate of discharge at end of apprenticeship term by vessel and Shipowners' Association. Steamer

Managing Owner.

In short, it provides that the boys will mess with the officers, receive one suit of uniform a year and \$20 a month the first year, \$30 the second, and \$40 the third; and when their time is completed they would get \$250 bonus. Several boys were beaten and terrorized by the sailors so that out of the number that went on only one remained the three years. On my British ships I have been successful in keeping boys both on deck and in engine room but not on American vessels for the reason stated.

Section 14 relates to the towing of barges, but that is not done to any extent on the Pacific coast.

Section 15 provides for the arrest of persons on foreign ships who have committed crimes. There is no objection to that. It also provides for the abrogation of any treaties in conflict with this act. I am not sure of the exact number, but there are several treaties that have to be abro-Let us inquire, Why disturb our treaty relations

with all those friendly nations?

Senator Crawford: Then you do object to 15?

Mr. Dollar: The latter part of it I object to.

Senator Crawford: You object to this latter part in regard to treaties?

Mr. Dollar: It provides for the arrest of persons on foreign ships who have committed crimes. There is no objection to that. But there is objection to the abrogation of 21 treaties. I object to that. As I say, let us inquire, why, disturb our treaty relations with all those friendly nations? The answer is very clear. First to permit those foreign The answer is very clear. First, to permit those foreign sailors on entering an American port to desert and leave their ships helpless without crews. This is accomplished by compelling the captain to pay his crew half their wages notwithstanding any ships articles they may have signed or contract they may have made in their own country and

under their own laws. Second, by compelling men to produce a certificate of efficiency, and as the sailors' union have all such men in their union, no sailor could be obtained unless furnished by them, so in the foreign trade this would put the shipment of crews entirely in the hands of the union, who would dictate wages, terms of agreement, etc.

Under the heading of remarks by Mr. Raker, Mr. Furuseth says:

The only party injured is the owner of the foreign vessel,

Hough's System of Ship Construction

For the Economical Handling of Lumber, Steel Material and Other Like Cargo

Por Particulars Write EDWARD S. HOUGH, Consulting Engineer 16 California Street San Prancisco, Calif. and he has protected himself in making his charter because

he expected this very thing to happen.

That is very sound reasoning, and all right. That is the desertion of the crew delay to the ship, and taking a crew from the sailors union at any exorbitant wages they chose to name. Now, taking Mr. Furuseth's statement for it, that it will and must increase the rate of freight, who is going to pay this excessive amount of freight? I answer you, it is the dear American public that is going to pay the excessive amount of freight. Again I ask, For what? It is for this, to build up one of the biggest trusts that we have ever attempted to put up in the United States. So, on behalf of the merchants of the chamber of commerce, I protest against this part of the bill, as it imposes an unnecessary tax on us of excessive freights, without any corresponding benefit to anyone except the foreign sailor. Forsooth, it is to raise the wages of the sailors of the world.

I have shown, I hope, to your satisfaction that if this bill goes through it will be the means of materially increasing the freight rates which American citizens will have to pay; and if I understand correctly the writing on the wall, it is for a lower cost of living and not to endeavor to increase it unless it is to benefit our own citizens. Therefore, instead of increasing the freight, an effort should be made to decrease it. It has been stated by the labor union leaders that if this bill goes through it will be the means of raising the wages of sailors throughout the world. For the United States Senate this is rather a big undertaking, and reminds me of a man trying to pull himself up by his boot straps.

I can not close without replying to the accusations made by the president of the International Sailors' Union, the father of this bill. I have read them in many of the Congressional Records, and while he was delivering an address before the San Francisco Chamber of Commerce he stated that a shipowner could hire a lot of hobos or beachcombers and send his steamer to sea, and that she would be a menace to all other ships that came in her way. I wish to explain to you that all deck officers and engineers must have a United States license, and before getting it they must demonstrate that they are competent. fore, with those experienced men on board if they are permitted to enforce discipline she is not a menace

Another statement was that seamen could not marry because they only got \$15 to \$20 a month. In answer to this I refer you to the pay rolls which I have filed showing the earnings to be four times those amounts.

He stated a change in our shipping laws was not neces The answer to that is that the rider to the canal bill permits us to register any foreign ship not over 5 years old under our flag; but on inquiry of the Commissioner of Navigation the other day he informed me not a single application had been received. Surely our laws have something to do with this, and this very Bill has a lot to do in keeping ships from coming under our flag, especially when there are nearly 2,000,000 gross tons of steamers owned by American citizens and flying the flags of foreign nations.

I made up a statement three years ago showing it was 1,600,000, and I am quite safe in saying it is nearly 2,000,000 tons of steamers owned by American citizens—that the enterprise of the Americans is sufficient to go in and buy 2,000,000 tons of foreign ships. Why? Because we are not permitted, by our own laws, to operate them.

Senator Nelson. You believe in free ships, then?

Senator Nelson. You believe in free ships, then?
Mr. Dollar. I believe in free ships; yes. But free ships are no good without something else. It is too long a story, Senator. I do not think I answered you properly, but at the proper time I would like to show you why they can not get the American register for our foreign ships. I can convince you beyond a question of a doubt that this bill has practically nothing whatever to do with it; but it is a long story. However, I can do it if you so desire.

Senator Nelson. The freight you earn and the dividends you pay on these ships, sailing under a foreign flag, backed

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"WE ARE TO BE PENALIZED TO THE EXTENT OF \$16,000 TO \$20,000 A YEAR"

by American capital, all goes to American citizens, does it not?

Mr. Dollar. Yes; the whole of it. That is only a very infinitesimal part of the tonnage of the world.

Senator Nelson. The most of your earnings come from American citizens?

Mr. Dollar. About half. Our ships engaged in the foreign trade earn as much homeward as outward, you know, so it is about one-half.

Senator Crawford. But you maintain that if you had to operate them under conditions that would permit you to put up the American flag, you would be driven out of business, because the discriminations against you are too heavy to be borne, and you could not do it?

Mr. Dollar. I do not think I would want to take up your time, but I will just make one statement. Supopes I changed one of my British ships to be an American ship, as I can do under this rider on the canal bill. The day that the American flag was hoisted on that ship, that day extra men would be put on board of that ship which would en-tail an expense of \$10,000. No other nation asks to have those men on board the ship.

Mr. Littlefield. \$10,000 a month?

Mr. Dollar. A year; \$10,000 a year. I can give you the men's positions on the vessels, and the whole thing, if it is necessary, but I do not want to take up so much time.

Mr. Littlefield. What is the percentage of increase of cost under the American flag, as compared with the British without going into detail—roughly, taking all those things into account?

Mr. Dollar. That could not be answered offhand, for the

Mr. Dollar. That could not be answered officially for the reason that you have to take into consideration the crews. Mr. Littlefield. Approximately?

Mr. Dollar. An American crew at \$50 a month—the increase would be considerably more than 50 per cent.

Mr. Littlefield. Thirty per cent would be conservative,

would it? Mr. Dollar. Yes; it would be more than that. I state that amount because I want to understate rather than over-

state.

Senator Burton. By operating expenses you mean the wages of the crew and the cost of provisioning?

Yes. Mr. Dollar.

Mr. Littlefield. And the increased number of men and officers

Mr. Dollar. I do not like to digress, gentlemen, because this is not really relevant to the question at issue. But our American measurement of a ship is about 30 per cent more on an ordinary cargo, simply, than on a British ship. Therefore, if I changed the flag on the British ship to an American, the first time I went into a foreign country I would be penalized by that country 30 per cent more than I would have been if I had retained the British flag, because the measurement is more.

Mr. Goulder. That is on all dues and toppage taxes? Mr. Dollar. I do not like to digress, gentlemen, because

Mr. Goulder. That is on all dues and tonnage taxes?
Mr. Dollar. Dues and tonnage taxes, and pilotage, and all the dues that are imposed. It is unreasonable, unjust, and there is no sense in it whatever.

Mr. Littlefield. But it is one of the features that makes

the embarrassment?

Mr. Dollar. One of the many. But I must not take up time in discussing that. However, if any of the Senators want that information, I will be pleased to furnish it.

There is another statement requiring more than passing

comment, namely, that it is no uncommon occurrence for ship owners to over-insure their ship, send her to sea with incompetent men and lose the ship, thereby selling her to insurance companies at much more than she is worth.

This is the statement Mr. Furuseth has made. It is in

the records here that it is quite a common thing for shipowners to be in the business, selling her to the insurance company at much more than she is worth; and, inciden-tally, Mr. Furuseth's statements here all say that the public has to pay for that. I do not see what the public has to do with the insurance companies. However, he may be able to explain that.

Instead of making a general statement like this, laying all shipowners under the ban, in justice he should name the ships so disposed of and the particular owners that are in that business. I make an emphatic protest at making such serious charges against shipowners in general in an effort to gain sympathy to carry through one of the worst bills in restraint of trade that has ever been presented to Congress.

STATEMENT OF CAPTAIN H. W. GOODALL, REPRE-SENTING THE PACIFIC NAVIGATION CO.

Mr. Goodall. Mr. Chairman, I should like to be heard, if you please. I am one of the unfortunates that belong on the Pacific coast, and have been waiting here a couple of weeks. We operate two of the fastest merchant ships under the American flag.

Senator Smith. Have you stated the company with which you are connected?

Mr. Goodall. The Pacific Navigation Co. We are operating two steamers between Southern California ports and San Francisco.

Senator Smith. You operate the "Yale" and the "Har-

Mr. Goodall. Yes, Senator. On each of those ships we have a crew of 135 people.

Senator Smith. Are these boats owned by your company?

Mr. Goodall. They are owned by the Metropolitan Steamship Co., but they are operated by our company—that is, the record is such. We have 25 men in the deck department, 34 in the engine-room department—which includes a deck engineer to all all this extra work that has been spoken of—and the balance are in the steward's department, with the exception of the purser and the freight clerk and the 2 wireless operators, who are on watch every instant of the time that the vessel is out of port.

We pride ourselves that these steamers are thoroughly maintained in each and every regard. They are cleanly from stem to stern and from truck to keel, and in proper and thorough working order and condition. I state this simply to demonstrate to the committee that we are carrying all of the crew which is necessary to maintain these

vessels in A1 condition. We do not work our men or the crew of the deck department on the cargo. They do not handle any freight. We do not work them over nine hours per day. We pay them 50 cents an hour for all work done on Sundays, holidays,

and after 5 o'clock p. m.
Senator Nelson. Do you pay them by the month aside

from that?

Mr. Goodall. We pay them by the month, Senator, the highest wages paid to any American seaman, or any seaman in the world—\$50 a month and found.

man in the world—\$50 a month and found.

Senator Nelson. So that if they work on Sundays or holidays during the month they get extra pay?

Mr. Goodall. If they work Sundays or holidays or after 8 p. m. on any day, they receive 50 cents per hour in addition to their monthly stipend.

Senator Smith. The whole year round?

Mr. Goodall. The whole year round.

Mr. Goodall. Our forecastles are light and airy, on the main deck, thoroughly ventilated and heated, and we furnish good, clean mattresses, blankets and clean linen to everybody. Is there any more that we could be asked to everybody. Is there any more that we could be asked to do? I do not think there is. I think my constituents here from the Pacific coast will substantiate all I have said and claim for the manner in which our ships are manned, and

the comforts which we give to them.

Senator Nelson. What are the hours of watches in the

fireroom and the engine-room?

Mr. Goodall. We have the three-watch system in the fireroom, Senator—four on and eight off; also in the engine-room department. The length of our run is only 18 hours

from port to port, I would like to add.
Senator Nelson. What about the quartermasters?
Mr. Goodall. The quartermasters stand watch on and watch off. We have four quartermasters, two on watch at time, one of whom is stationed on the lookout at night, and the other in the station of the look of the station. and the other is engaged in the pilot house, steering the

Senator Nelson. That makes two watches, then?

Mr. Goodall. Yes, sir: on deck. Under the guise of additional safety to passengers we are to be penalized, in addition to all that we are giving our men, to the extent of from \$16,000 to \$20,000 a year. That is to be done under the state of additional cafety to That is to be done under the guise of additional safety to passengers. The actual reason of this is not for the safety of the passengers, but it is to increase the number of sailors to be employed, and the earning power of the individual sailors. As an instance, taken in conjunction with section 12 of the proposed bill, we would be compelled, having 16 lifeboats on each object. lifeboats on each ship, to carry a complement of 32 men in the deck department.

Senator Nelson. How many do you carry now, you say



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"WE ARE PROUD OF OUR SHIPS AS ARE A GREAT MANY OTHER OWNERS"

Mr. Goodall. Twenty-five all told, Senator. We would be compelled to carry 32 men of the rating of able seamen or higher. Of the rating of higher than able seaman we would sum up 10 men—the captain, 3 officers, a quartermasters, the boatswain, and the carpenter, making a total of 10, compelling us to carry 22 additional seamen in the forecastle. Our present crew in the forecastle consists of 8 sailors and 6 American deck boys, Senator.

These sailors, with the exception of two seamen, whom we term station men and who stand watch and watch, are never called upon to do any work at sea at night nor in port at night. The sailors cease their work and their duties are completed at sea at 5 p. m. They do as they please, and have their meal, and have nothing to do but sleep all night, and turn out at 7 o'clock in the morning.

Under the terms of this bill, if we are compelled to carry 22 men in the forecastle, we will say that 11 of those men go on watch at midnight. Those men will then turn in at go on watch at midnight. Those men will then turn in at 6 o'clock in the morning, and will not, in the ordinary run of things and the change of watches, be available until noontime the next day, although on our run of 18 hours the vessel arrives in port at 9 o'clock in the morning. According to our schedule, we arrive in San Francisco, for instance, at 9 a. m. and we leave at 4 p. m. Eleven men will go off aspare at 9 o'clock; and look is not sleven see will go off ashore at 9 o'clock; and Jack is not always so sober as he might be, although I am not branding the sailor man as a drunkard by any means. But we all know that the sailor does at times hoist in a little more than is good for him. Nobody knows and nobody is going to guarantee the condition in which that sailor will return to his duties at noon ime. He has nothing to keep him busy all the fore-When he does return at noontime, bear in mind, noon. When he does return at noontime, bear in mind, gentlemen, we have lost his time for all of the morning. We are limited under this legislation to nine hours a day; but under the labor union regulations of California, by which we are bound, his time after 5 o'clock must be paid for at the rate of 50 cents an hour. The consequence is that we actually obtain from that man for one day's services four hours' work, because as a general thing the hour between 12 and 1, when the ship is in port, is used by the men to get their meals. The meal is ready, the cooks are ready to serve it, the mess boys are ready to serve it, and ready to serve it, the mess boys are ready to serve it, and the result is that no work is accomplished or can be started until 1 p. m., and we have secured four hours' work from this seaman. This will result, gentlemen, in penalizing two American ships running in the Pacific coastwise trade to the extent of between \$16,000 and \$20,000 a year.

Senator Smith. That is, for overtime and the increased

complement of men?

Mr. Goodall. For the increased complement, Senator, principally. I think it figures sixteen thousand and odd dollars, to give the accurate figures, in the increased number of men, their wage, their board and keep.

Mr. Flynn. Was there not quite a reduction of men in the fireroom and engine-room when those ships came to the Pacific coast, when they were converted into oil burners, from what they had when they were operated on the

Atlantic coast as coal burners?
Mr. Goodall. I want to answer this one question, and then, Senator, I should like to be allowed to proceed without interruption. Those vessels were not converted into oil burners on the Pacific coast. They operated one year here on the eastern coast as oil burners and carried the same number of firemen they are now carrying.

If you will pardon me, I should like to proceed now with-

out interruption.

Mr. Flynn. All right. I will not interrupt you.

Senator Smith. Let me ask you a rather pertinent question, from my point of view. Is the experiment that is now heirs tried on the Pacific coast by your company a prosbeing tried on the Pacific coast by your company a prosperous one

Mr. Goodall. Yes, sir; it is now. With increased legislation it may not be.

Senator Smith. Would you be able to meet these addi-

tional charges from your ordinary revenues?

Mr. Goodall. Not unless the revenue increases, Senator. I was just about to call the attention of the committee to the fact that we are operating in the coastwise trade and we are in the keenest of competition with railroad lines.

Senator Smith. The reason I asked the question is because I thought taking those vessels out there was largely an experiment.

Mr. Goodall. It was, and a risky one.

Senator Smith. And I did not know whether they had struck it right or not. They are looking forward to the

exposition, I suppose, or the world's fair at San Francisco,

to assist them very much? Is not that true?

Mr. Goodall. Yes, sir. That is what we hope for, but

we have a long way to go before that.

Senator Smith. In your ordinary business, could you stand this excess charge, if it should result in that? I was rather anxious to know your opinion about it.

Mr. Goodall. The increased cost represented here would be a very serious blow to the Pacific Navigation Co., with the volume of business which it is now doing.

operating expensive ships; we are maintaining them; we are carrying large crews, and giving all the comforts to those men. I believe in making a ship homelike for sail-ors. I believe in treating them right.

As I say, we are proud of our ships, as a great many other owners are, no doubt. We want the best men in them. We appreciate that the only way we can get them there is to make life comfortable for them. I have told the men themselves on the question of linen: "If you will be cleanly about your quarters and if you will take an interest in your living quarters, if you will take an interest in the vessel, and look upon this as your home instead of a mere stopping place, where you spit tobacco juice in the corner and abuse your living quarters as well as other facilities for your physical comfort: if you will show a different place of the content of cilities for your physical comfort; if you will show a different disposition from that, we will help you, and we will give you all the comfort that is anywhere near consistent with what might be expected in the way of living for a sailorman aboard ship," and we have carried out that policy.

I can see that the point is about to be raised that the number of men necessary to handle the boats in case of emergency or in the ordinary drill may not be available, owing to the fact that it may be necessary for certain members of the crew to be on watch in the engine-room and elsewhere at the time of the drill, or at the time of the necessity of launching the boat. I have been in command of a number of ships on the Pacific coast and elsewhere; and regarding the ships which we now handle, I desire to say that if the boat stations and fire stations as well are properly gotten up, you can distribute the men that are on the different watches among the different boats so that at all times, regardless of what hour of the day or night the fire alarm may be given or the boat drill required, there will always be a sufficient number of crew to each boat to properly handle them.
Senator Smith. How many to each boat?

Mr. Goodall. That depends upon the size of the vessel, Senator, and the size of the crew and the size of the boats

to be handled. Take the ordinary standard boat. Senator Smith.

Mr. Goodall. The ordinary standard boat? There is a great difference in the sizes, but I suppose six men are what might be considered an average boat's crew

Senator Smith. Is that a boat that would hold 60 people? Mr. Goodall. Or no, sir; a boat that will hold about 20 people; from 25 to 27 or 30 people. A boat of about 250 to 300 cubic feet capacity can be handled by 6 men very

Something was said here the other day, and a great deal was said, about the steamer "Columbia"—in regard to her Houghton draft and what transpired at the time the vessel was lost. I commanded the steamer "Columbia" for the greater part of a year. At my suggestion, while I was there, the davits were moved a little farther apart in order there, the davits were moved a little farther apart in order to facilitate the swinging of the boats. The remark was made that the vessel sank in five minutes, without a boat being launched. The man who was master, and lost his life with that ship, was a very close friend of mine, and I had a great deal of admiration for his ability and always considered him a better man than I was at the game. Yet when I was on the ship we used to figure—and if the logbooks of the ship were available they would prove it—that only eight or nine minutes were allowed from the time the alarm was given for the men to go to their fire quarters. alarm was given for the men to go to their fire quarters, take the hose out of the racks, word was sent to the engineroom and the fire pumps started, two hand pumps, one forward and one aft, were also put in motion, and the water started from them. The whistle was blown, the men went to their boat quarters, raised the boats from the chocks, swung them out, swung them back, and landed them in the chocks, and secured the gripes in not to exceed nine minutes; and if more than nine minutes elapsed, they would have the boat drill over again. Now, when it is said that five minutes expired, and there was no fire drill

"WHAT WE HAVE DONE HAS BEEN DONE VOLUNTARILY"

and there were no boats put out, that is not correct, gentlemen.

This sad accident occurred shortly after I commanded the ship, and I was naturally interested in it. Some of the officers who had served on the ship under me lost their lives in that accident.

Senator Nelson. Where did the accident occur?

Mr. Goodall. The accident occurred on the Pacific coast soun of Cape Mendocino. The "Columbia" was run into by the steamer "San Pedro" and sank. Some of the omcers who were also on the ship at the time I was in command of her were saved, and I talked with them about it. There were some of the boats lowered, and lowered in orderly and good condition. Unfortunately the ship was struck in a very vital part. She was a single-bottom vessel, and she filled very rapidly, and unfortunately a number of lives were lost.

I also understand from these people who were on the scene that there were no great heroes developed in the forecastle of that ship. There was no floundering around in the water and boats turned over and baled out and immense numbers saved. I am not intimating, gentlemen, that every man aboard the ship did not do his duty. But there were no heroes developed in the forecastle any more than in the fireroom—not a bit more—or in the steward's department.

Senator Burton. What share of those on board were saved?

Mr. Goodall. I can not tell you, Senator. There were eighty and odd people lost. I think probably about two-thirds of them were saved.

Mr. Dollar. There were 86 lost.

Senator Burton. How long was it after the actual collision before the vessel went down?

Mr. Goodall. In cases of that kind, with all the turmoil and confusion that results, nobody can tell you afterward whether 5, 10 or 15 minutes elapsed before the ship sank. Senator Smith will know how the testimony conflicts in every instance of that kind. Under such circumstances there is nobody that stands with a watch in his hand and makes note of the time. After all the excitement is over, if you ask the question, How much time expired? you will get opinions varying anywhere from two minutes to half an hour.

There is another point I want to make in regard to this double-watch business: In the case of men who now sleep in the forecastle all night because there is no duty for them to perform during the night, and work all day be-cause there is work for them to do, and are carried par-ticularly to accomplish that work which can be done in the daytime and only in the daytime, the only reason given for dividing them into two watches is that they are to be available in the event of the necessity of quick launching of the boats.

Now, gentlemen, you all know that no chain is stronger than the weakest link in it, nor can a body of matter move faster than the slowest part of it. We may build a ship with a 20-knot model and a 20-knot engine, but she will not go any faster than you can get steam out of the boilers

to drive her. The United States regulations state the minimum size which any boat aboard of a ship shall be before she is considered a lifeboat, which is 180 cubic feet. That boat will weigh, with its equipment, approximately one ton and a half. It would be a dangerous thing to cast the lashings and the fastenings off of that boat before there were a and the fastenings off of that boat before there were a sufficient number of men around it to hoist it and take care of it. That is common sense. What is the use of one man standing up there? He can not raise a ton and a half boat, both ends at a time. He does not dare loosen the gripes. If he does, he does an unwise thing. What is he to do? He is there, as was said, tramping back and forth the bire himself from freezing to death, and keep awake to keep himself from freezing to death and keep awake all night the poor passenger who has paid his fare and is in a stateroom directly underneath. Show me what he is to do. The only thing to be accomplished by that one man-let us give them all possible latitude, looking at it from a practical standpoint—is to cast the canvas cover off the boat, so that the falls can be thrown out and the boat made available. That is what he can do. made available.

The canvas covers on our boats are held by two canvas bellybands, as they may be termed, which pass under the bottom of the boat, with a small lanyard rove through an earring, and a number of grommet holes in either end, with a slipnoose so arranged that you pull one end and the cover is immediately unfastened from the boat, and a man

can throw it off in ten seconds. That is what he can do while he is waiting for the rest of the crew to arrive, and it is the only thing he can do. So that this idea of doubling up the crews of these boats, and penalizing American ships to the extent of thousands of dollars per year, under the guise of additional safety to passengers, is not so.

Another point which I think has quite a bearing on the case is this: It has been suggested here by the representatives of the various owners that a clause be inserted in section 1, and I think in section 12 as well, whereby these rules shall not be applicable to vessels engaged in the coastwise trade and on the Great Lakes. It seems to me that is reasonable. Under the present conditions, I can not see why Congress snould be called upon to legislate upon the hours of labor of a man ashore, you might say, simply because he is a sailor, any more than they should be called upon to legislate upon the hours of labor of a brickmason or anybody else engaged in other than Government work for which the Government is paying.

Take our particular situation, and it is almost similar in nearly every coastwise business: We touch at three ports
—San Francisco, Los Angeles and San Diego. The greatest time between any port is 18 hours. If a man desires to quit his job with us, under the present law, or under the bill as it stands, under any circumstances, if he arrives in Los Angeles and he is sick of his position and tired of his job, he simply says to the first officer or the first assistant engineer in charge of the department in which he is working: "I want my time." He is given his time check, which he takes to the purser and cashes, and goes off about his business.

I can understand why Congress should be called upon to regulate the pay, and particularly the conditions under which a man may receive that pay, and the conditions under which he may labor in the foreign trade, where he goes off, possibly in a sailing vessel, or even on a steamer, on a long voyage, where he is out beyond the reach of any manner of redress except what may be given him by the law. Then, when he finally reaches a port, it may be a foreign port where he does not understand the language; and in case he has been imposed upon on the voyage across and feels disposed to leave, if he does leave, I can appreciate that under the present law he has got to go into a foreign port, and leave his wages behind him and go into court where he may not speak the language.

That is all right in the foreign trade. But when you come down to our conditions, and the man leaves with us from San Francisco at 4 o'clock in the afternoon and arrives at Los Angeles the next morning at 10 o'clock, and is in a position to demand his wages and walks ashore, he comes so near being a man that is actually working on shore that I can not see why Congress should be called upon to legislate in his favor any more than in favor of men employed all the time on shore. And the same thing applies to any of the men working in the coastwise trade,

In addition to that, in these coastwise ports in which a sailor might see fit to quit, or in which he might be discharged, he does not care; it is very easy for him, if he so desires, to obtain employment on another ship and proceed best to the sailor with the sailor of the sailor ceed back to the port from whence he started, which is usually a short distance away and takes only a short space

Now, as to the licensing of seamen—
Senator Smith. The last point that you made goes to the question of a rule that is applicable to all these conditions alike?

Mr. Goodall. I think that is impossible, Senator.

Senator Smith. What would fit one situation would not fit another?

Mr. Goodall. Absolutely.

Mr. Goodall. Absolutely.

Senator Smith. But yours is an exceptional one?

Mr. Goodall. In the case of pretty nearly every situation that you will find in the shipping business of the country, Senator, whether on the Lakes or even on the coast, where we parallel one another, plying between the same ports, rules and regulations and statutes might be written out which it would be very hard to make so that they would be applicable to all conditions of trade without absolutely doing injustice to a number of them.

absolutely doing injustice to a number of them.

Mr. Brittain. What Mr. Goodall is stating applies exactly to our Atlaitic coast trade. Everything that he has said

exactly applies to it.

Senator Smith. Would you have any objection, Mr. Goodall, to our putting into the statute the things that you now do voluntarily?



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None at all, Senator—none whatever. Mr. Goodall. we have done has been done voluntarily, and we certainly have no objection to being told to do what we are perfectly willing to do.

As to the licensing of so-called able seamen: A great

deal has been said here—and I do not know that I can say much more-to the effect that there is nothing about the experience of the sailor at sea today that tends to make a boatman out of him. A man may be an able-bodied seaman on the "Mauretania" or "Lusitania" plying across the western ocean here for 10 years, and aside from the boat drill he may never be required to handle or to put his weight on the thwart of a boat. But at the same time, by this requirement you preclude young men who may be raised around the wharves and on the rivers and in the harbors and who have fooled around yachts and boats from ever starting in and obtaining a license of this kind.

The next question is, Where are you going to get your supply of licensed seamen in the time to come? We will

take it for granted that a demand for a certain class of labor will create and bring to it enough men to fill all of the vacancies and generally a little surplus. Sometimes there may not be enough to go around, but generally there is a little surplus. We might admit that under the prois a little surplus. We might admit that under the proposed enactment would be eligible for these licenses after having served three years in the deck department. You license them all. These men are going to die at some time. They are going to drift away. Where are you going to get their successors from? Have you thought of that, gentlemen? Where are they coming from?

We will say, in round numbers, that you want 20,000 seamen to carry on the coastwise business of the Pacific coast 22,000. Lam

coast, and that you have on the Pacific coast 22,000. I am merely quoting this as an example. I have not looked into the statistics. I do not know just how many seamen we have, but we will say that you license the full 22,000 seamen. In the course of a year or two 4,000 of those seamen will have drifted away into other channels. Some of them will have died; some of them will have quit the sea; some of them will have gone back to their native land, perhaps. Where are you going to get enough sailors with licenses to man our ships?

The next point is the impractical working of the bill. Let me give you an example of our case. We have a ship valued at a million and a quarter dollars, and a crew, as I stated, of 135. We have on board, perhaps, from three to six hundred tons of cargo. We also have on board possibly from 200 to 700 passengers, all on board and ready to sall from the port of San Francisco at 4 p. m. Just half of this boat's crew, under the proposed bill, have gone ashore at 12 o'clock and are not supposed to be on duty until 6 that evening. Of course we trust that they will be back in order to sail on the ship at 4 o'clock. Suppose one of them does not come; one irresponsible sailor gets too much steam beer on the water front of San Francisco and fails to arrive before the ship sails. The ship, the cargo, the balance of the crew, and all the passengers are held there awaiting the arrival of that sailor or the substitution of another one. He does not arrive and we want to find a substitute.

find a substitute. Where are we going to get him? Suppose we should attempt to keep a book of addresses of sailors, so that we could ring them up on the telephone and ask them to come down, as we are short a sailor with a license and have to have one in order to go to sea. In a license and have to have one in order to go to sea. In the first place, we would find that the sailors did not have telephones. In the next place, we all know that sailors are of a roving disposition, and we would not find them at home. Where would we go to get this sailor with a license, to permit this ship, with her 700 passengers and 600 tons of cargo, to proceed to sea? Why, we would go to the Sailors' Union of the Pacific, and they would furnish them to us. That is where we would go. That is where we would be forced to go. In other words, gentlemen, this bill proposes to create one of the greatest monopolies of labor that ever has been thought of. labor that ever has been thought of.

Senator Burton. You maintain that that situation might arise under section 12?

Mr. Goodall. Under a combination of the two, Senator—the two watches and the number of men required. It would absolutely arise under section 12 alone and would

be exaggerated by section 1.

Senator Burton. Here is a question that has been suggested to me: Are not all the sailors on deck when a vessel goes out of port or is coming into port? Is not that the case on all vessels?

Mr. Goodall That is the case now. I suppose we would

Mr. Goodall. That is the case now. I suppose we would

feel justified in getting them out if we were called on to carry these extra sailors, although there would be no need of them.

Senator Burton. Is that the case now? Mr. Goodall. That is the case now, sir; yes, sir. They are there to handle the lines and make the ship fast.

Mr. Brittain. There is nothing to prevent their leaving right at the moment the ship is sailing, is there?
Mr. Goodall. No; and they do leave, and we are held

up, and we have difficulty in getting others to take their

Senator Burton. We shall have to take a recess, Mr. Goodall, pretty soon. About how much more time will you occupy?

Mr. Goodall. If you will give me about four or five minutes more I will be through, if it is agreeable to the committee.

There is another thing I should like to say in regard to these licenses to be granted to seamen: In my mind, there is a grave question of public policy involved in the granting of licenses by the American Government to foreigners. You propose under this law that British ships shall come in here, and the crew shall be mustered, and it shall be ascertained that they understand and speak the language of their officers. There will be no question about it. You then propose to file them up before the United States local inspector and have them make affidavit that they have been at sea on deck for three years or more, and he will

grant them a license—grant a license to a British subject.
What are you going to do when your Japanese ship arrives and they pass the same language test? Are you going to file them up before the United States local inspector at San Francisco and license the entire crew of Japanese? And how is the local inspector to ascertain whether or not they have been three years at sea? Who is going to interpret for them? The local inspector can not speak the Japanese language in order to ascertain whether those are the facts or not. Are you going to permit these Japanese ships to sail away with every member of the crew in the forecastle carrying a license issued by the United States Government? I think it involves a grave

nestion of public policy—a very grave one.

Now, with regard to the American boy: There are 24 pages in this bill, gentlemen, and there are 19 lines of it devoted to the American boy. The American boy is get-There are 24 ting an awful proportion, an awful lot of consideration, in this legislation. These two ships of ours carry 12 Ameri-

this legislation. These two ships of ours carry 12 American boys, 6 in each ship.

Senator Nelson. What is the age of those boys?

Mr. Goodall. I can not tell you offhand, Senator. We do not have them sign articles, as we do not travel outside of the ports of the same State. So our crews do not sign articles.

Senator Nelson. I mean, what is the age of the youngest one?

Mr. Goodall. I should judge they range along from 17 to 21, from my observation of them—from seeing them around. There may be some older and there may be some vounger.

We teach these boys to scrub paint, they shine brass, they scrub decks, they wash decks. Our line has been in operation only two years; but it is our hope that ultimately these young men will become sailors enough and mately these young men will become sallors enough and versed in the ways of the sea so that we can graduate them into the pilot house as quartermasters, and from there on to the bridge, and make young American officers out of them for American ships. That is a custom which is carried out in nearly all of the passenger vessels in the coastwise business between ports of the United States on the Pacific coast, as Capt. Hibberd will bear me out in saying. As the master of a ship on the Pacific Coast is a page and officers on the bridge with me who were placed. have had officers on the bridge with me who were nice, fine, bright, intelligent American lads, and they had come up from being deck boys on American steamers on the Pacific coast.

If the proposed legislation passes, gentlemen, as it stands, what is going to be the result so far as the American boy is concerned on the Pacific coast? I can not speak for those on the Atlantic coast or on the Great Lakes, but on the Pacific coast what is going to be their status? The room which they now occupy in the forecastle we shall have to accommodate these sailors to ride up and down the coast, to do nothing. The room they occupy in the messroom we shall have to have to feed these sailors that are riding up and down. We can not afford to have sailors with nothing to do, and then to have these boys as a luxury;



"NOT MORE THAN FIVE PER CENT OF THE MEMBERS OF THE SAILORS' UNION ARE AMERICAN CITIZENS"

but we can carry boys with a reasonable amount of work

to do, work which they can do, and are glad to do.
If this bill passes through Congress, gentlemen, there can be only one result so far as the American boy on the Pacific Coast is concerned. He is going to be on the beach, out of a job. When that occurs he is going to ask why; and what are you going to say to him? "The great American Congress of your country has legislated you out of a job and you are out on the streets.

I thank you.

Senator Burton. We will now take a recess until 2:30

STATEMENT OF REPRESENTATIVE WILLIAM HUMPHREY, OF THE STATE OF WASHINGTON.

Mr. Humphrey. I wish first to call the attention of the committee to the title of the bill. I maintain that the bill does not secure any of the results named in the title except, perhaps, the abolishment of the involuntary servitude of American seamen in foreign ports. I maintain, also, that the number of American seamen is very small. That portion of the bill does not apply to the coastwise trade, and it does not affect the Great Lakes. I might call the attention of the committee to the fact tha in he trade on the Great Lakes, as I understand it, the sailors' union have not had control of that trade for the last four or five years, and there we have 50 per cent, according to the testimony of Mr. Coulby, who was before this committee, not only of American citizens, but of men American born; so if we are to judge by results where the sailors' union has no control we get a very much larger number of American sailors than where they are in control. Not over 5 per cent of the sailors belonging to the sailors' union are American citizens according to the statements made by the officers of the union.

Now, to show you that there are no American sailors to be benefited by this bill, I call your attention to the fact that it has been testified by the officers of the sailors' Union that not more than 5 per cent of the members of that union are American citizens. We carry between 7 and 8 per cent of our over-seas trade in American vessels, and upon those few vessels there are not over 5 per cent American sailors, but I call your attention also to the fact that of that small number all of those upon the Atlantic Ocean that run over seas are upon vessels running under the subsidy act of 1891, so that they are kept there under the provisions of that law. This bill would not have any effect in that respect, so that in the last analysis there are no American sailors affected by this bill. I make that emphatic, because it has been the great cry that we must free the American sailors. As a matter of fact, Mr. Furuseth has had the offer from me for the last five or six years that I would try to agree with him in any bill that he wanted which tended to free the American sailors. Nobody has any objection, so far as I know, to freeing the American sailors. If they want to do that, they can easily get a bill out of our committee and get it through with

the assistance of those who oppose this bill.

Then there is a provision in this bill to prohibit the manning of American vessels by unskilled men. When this bill was before our committee, for the first time since I have been a member of that committee—and I have been a member of it for 10 years—an attempt was made to play politics with a bill before that committee. In other words, this particular bill comes to you from the House with the minority members of that committee having had but little opportunity to consider it, especially myself, and I was probably more active in regard to the bill than any one else. They held meetings at which Mr. Furuseth was present. He practically drafted this bill. It came before present. He practically dilated this bill. It came before our committee and it was reported out without a single meeting to discuss it as I remember. There was no discussion about it and no chance given to point out the inequalities, not to say anything about the iniquities of the

One of the things that we attempted to reach some agreement on was with regard to this question of safety. The "Titanic" disaster came along just about the time that we were considering the matter, and, of course, they that we were considering the matter, and, of course, they took advantage of the public sentiment that arose incident to that disaster. I am not criticizing, but only relating circumstances. I tried to reach some kind of an agreement with regard to the question of safety. They want to have able seamen man the lifeboats, but when a proposition was made that an able seamen should know comething tion was made that an able seaman should know something about handling a lifeboat it was very promptly rejected.

You will see by reading the bill that instead of being skilled in handling a lifeboat, or having qualifications in that regard, it simply says that he shall be drilled. I tried to get something in there that should require a man who actually handles a lifeboat to know something about it. An able seaman, under the definition in this bill, does not An able seaman, under the definition in this bill, does not of necessity know any more about handling a lifeboat than a man who plows corn. What are the qualifications of an able seaman as defined by the bill? Nineteen years old, as I remember it, and three years on deck, either at sea or on the Great Lakes. There are many men that have been on the deck at sea or on the Great Lakes for that length of time that have power handled a lifeboat or an length of time that have never handled a lifeboat or an oar. In these modern days an able seaman, under that definition, largely means a man that scrubs decks. Such a man has no experience in the handling of lifeboats; none whatever; and that was one of the things that I especially urged should be covered by some proper provision requiring that a man should know something about the handling of a lifeboat; but it was rejected, and we have now in the bill a provision that they shall have two able seamen to each lifeboat, but no requirement that the able seaman shall know anything about handling the boat. There is an amendment proposed in the committee print in which that is changed, I notice, and very much for the

Now, they require that an able seaman shall be a man for instance, on deck. They reject the fireman. According to the evidence, the fireman on the average vessel knows as much about handling a lifeboat as an able seaman. The firemen are younger men and stronger men. and, as a rule, they know more about handling the life-boats, but this proposition in this bill says that they shall be men on the decks, who have had certain experience which in no way qualifies them. It simply means that you are going to compel the vessel to carry a lot of these socalled able seamen that know nothing about handling vessels. I trust that when the bill comes out of this committee it will contain some provision that an able seaman mittee it will contain some provision that an able seaman should know something about the handling of a boat. If these gentlemen mean what they say, what objection can they have to having a man who is an able seaman know something? Under those conditions, I have no objection to that portion of the bill, but it ought to be made not to exclude the firemen, who receive the same drill and all the instructions that are given on a vessel in regard to the handling of lifeboats. This proposition as it stands now requiring that an able seaman sition as it stands now, requiring that an able seaman shall have been three years at sea and be 19 years old,

is no qualification whatever.

Some man who appeared before our committee testified that he had made either two or three trips around the Horn as commander of a vessel and that he had never seen a lifeboat lowered during those trips, and the testimony is undisputed that the majority of the so-called able seamen know nothing whatever about handling a lifeboat. It has been frequently stated that these so-called able seamen very strenuously object to drill on board. It do not know whather that it know whether that is true or not. That has been charged by the shipowners, but, whether it is true or not, I hope that when you come to that section of the bill with regard to an able section. to an able seaman you will, in the interest of life and safety at sea, make some provision that when a man is an able seaman and you compel the vessel to carry him that there will be some grantly as to his being she to that there will be some guaranty as to his being able to handle a lifeboat.

The next point I wish to call your attention to is that The next point I wish to call your attention to is that in regard to the many specifications concerning foreign ships. I am not going to take time to read it. I will state it in substance, however. In this bill we tell a foreigner what kind of a sailor he shall employ. Remember that all these provisions in regard to manning apply to foreign sailors. For instance, we say to a Japanese vessel owner that you shall employ this man or that man as a sailor; he shall be so old: he shall have had so much experience; he shall be so old; he shall have had so much experience; he shall speak a certain language; and you shall pay him in a certain way. We say that if you violate any of those agreements in regard to the payment or the qualifications of the men when the vessel comes into an American port the owner or contain to the owner or the owner or captain is liable to arrest and the ship shall not clear until the conditions have been complied with.

Now, I want to submit this question to you: How do you think a foreign vessel owner or any foreign nation will look upon a law of that kind, which we propose to place upon the state of t place upon the statute books without giving any notice to him whatever? We say to every other nation of the

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"JAPANESE VESSELS RECEIVE \$100,000 FOR ROUND TRIP FROM THE JAPANESE GOVERNMENT"

world, we will tell you how to run your ships. Take this illustration: Suppose that an English owner makes a contract with a German sailor to pay him a certain amount of his wages in advance, a contract that is legal under the law of both those countries, and that vessel comes into an American port. Under this bill you can seize that vessel, fine the master, and tie up the vessel, and he is not permitted to clear until he complies with all the condi-tions that the law contains. Do you suppose that any self-respecting nation is going to submit to anything of that kind in violation of our treaties, when they have never had any opportunity to consider the matter?

Then there is another proposition that I want to call your attention to, and that is in regard to the question of desertion, the bill making it against the law in this country to put foreign sailors who desert back on a vessel. I am free to say that I am in entire sympathy with that proposition so far as it applies to American sailors. I am in entire sympathy with it so far as it applies to foreign sailors where we can do it without destroying ourselves, but I do not believe that in order to be altruistic and to help these foreign sailors who do not think enough of this country to come under the American flag, or to be-come American citizens that we ought to destroy the commerce of this country and throw it to other countries. other words, one of the main purposes of this bill is to ask the Congress of the United States to relieve these foreign sailors from burdens which their own countries

will not.

I want to show you how this bill if it becomes a law would affect the Pacific coast. I first want to call your attention to what we are going to meet with at San Francisco, keeping in mind this question of the desertion of the sailors and the restrictions that you prescribe, the language tests, etc. The purpose of the language test, of course, is to get rid of the Chinese sailors. That is a thing that I am heartily in sympathy with and would like to see done if it can be done. If it does not do that there is no purpose in that portion of the bill. If you take that out of the bill the Sailors' Union would have no further use for it. As to the conditions we meet with on the Pacific Ocean, take the Pacific Mail that runs from San Francisco to Hawaii and from there to Hongkong, and somecisco to Hawaii and from there to Hongkong, and sometimes on down to the Philippines. They have as their main competitor a line of Japanese vessels. If we enact main competitor a line of Japanese vessels. If we enact this law and change the crews and compel an English-speaking crew to go into the American vessels, Mr. Schwerin estimates that that would cost \$100,000 additional for each round trip for each vessel. The Japanese vessels that run against the American vessels now have crews that cost the same as the Chinese crews. In fact, in many cases they have Chinese in their crews, I believe, on their vessels. Those Japanese vessels running in competition with the American lines receive \$100,000 in gold for each round trip from the Japanese Government. So if you pass this bill you have the difference of \$200,000 between the American and the Japanese vessels for each tween the American and the Japanese vessels for each round trip they make across the Pacific.

Senator Crawford. Is it an absolutely authentical fact that they get \$100,000 in gold for each trip?

Mr. Humphrey.

Mr. Humphrey. Yes.
Senator Crawford. I have not seen any manuscript or document containing proof of it.
Mr. Humphrey. There is no question about it, and copies of the law could very easily be furnished if it were a controverted point. The only thing that is uncertain in the proposition that I have stated to you is whether or not it would cost \$100,000 to change the crew. That is a matter of speculation, to a certain extent. It is not necessary to argue what the result is going to be. The American ships will simply take the Japanese flag or go out of business. My judgment is that they will take the Japanese flag. I know of no reason why they should not. It will not cost anything to make the transfer and put if It will not cost anything to make the transfer and put it

under the flag and keep the crews they have now.

That is the situation at San Francisco. Now I want to call your attention to the situation at Seattle and Tacoma on Puget Sound. I want to call the committee's attention to this map here and to the relative positions thereon of Vancouver, Tacoma and Seattle. You will notice that Seattle is situated just above Tacoma. The distance from the point of the poi the point where the vessels enter Puget Sound to either Vancouver or Seattle is almost exactly the same. It is open and unobstructed navigation both ways. There isn't anything to keep the deepest vessels in the world from going to either place they wish. Here is the proposition

that presents itself to the people of Seattle: We have foreign steamship lines today coming into Puget Sound; two of them are English that employ Chinese crews; two of them are Japanese employing Chinese or Japanese crews, cheap crews. There is also a German line, the Kosmos Line, that runs along the coast to South America, and they employ, I think, the Spanish-speaking crews very largely. I am not informed as to whether they employ largely. I am not informed as to whether they employ Chinese crews or not.

Now, as I have said, there are those four lines coming into Puget Sound. Let us take first the Japanese line. Under the Japanese flag they will not have to change their crews under the wording of this bill. They can comply with it so far as that portion of it is concerned in reference to the sailor speaking the language of the officers or understanding it.

Now, Mr. Furuseth has said that he thinks the Japanese crews will desert, and I am sorry that he is not here this afternoon, as there are several statements I would much rather make when he is present. He has reason to think, if you believe him, that if he can get this bill upon the statute books that when a Japanese vessel comes into the port of Seattle he can persuade the crew of that vessel to desert and not go back on the vessel unless they receive

higher wages.

Senator Crawford. What would our exclusion laws do with relation to that?

Mr. Humphrey. They would let them in. That is one

of the things in this bill that should be carefully consid-

Senator Jones. We have no exclusion laws against the Japanese.

Senator Crawford. Well, we have a sort of treaty under which they are not allowed by Japan itself to come in.

Senator Jones. It is a sort of a private agreement or

gentlemen's agreement.

Mr. Humphrey. If they should come into that port and desert, then the bill provides that that vessel can not depart until they get a crew that can understand the lan-guage of their officers and the orders that they give. Now, where are you going to get them? What are you going to do with the Japanese vessel if the crew deserts? There are few Japanese sailors to be drawn from either in the port of Seattle or that of Tacoma, and the vessel can not clear until they have complied with that section of the law, and their deserters can not be returned.

Then, there is the question of the qualification of the men that they shall employ and requirements with regard to the language that they shall speak and how they shall pay them. The question arises, Do you believe the Japanese vessels are going to continue to come into Seattle or Tacoma with all those restrictions placed upon them when they can go to Vancouver, British Columbia, and receive every convenience and advantage there that they can get at Seattle? The Great Northern and the Northern Pacific have their terminals there, and the Milwaukee either thas now or is making arrangements for terminals. You can reach every portion of our country just as cheaply through Vancouver as you can by going into Seattle or Tacoma. What is going to become of our commerce, and where do you think these vessels will go?
Senator Burton. Are the freight rates from Vancouver

to St. Paul, Milwaukee, etc., the same as they are from

Seattle or Tacoma?

Mr. Humphrey. Just the same.
Senator Burton. How about the intermediate country, as in Idaho and Montana?

Mr. Humphrey. I have never looked specifically, but I know, as a matter of common knowledge, there would be no difference, because the Great Northern has a branch that runs to Spokane from Vancouver and the rates are all the same. The distances are the same and the rates all the same. The distan would be just the same.

I have made a statement with regard to Japan. take it in regard to the English vessels. The English lines that come into Puget Sound have Chinese crews. The English Under this bill they would be compelled to dismiss those Chinese crews and employ English-speaking crews. If this is done the cost has been estimated to be \$50,000 a round trip for each vessel. Why should an English vessel pay \$50,000 a round trip additional to come down to Puget Sound ports above what it would cost it to go to Vancouver?

Senator Burton. They would have to dismiss them because their officers do not speak the same language as the sailors. The provision of the bill requires that 75 per



"WOULD ADD TO THE COST OF THE "MINNESOTA'S" OPERATION \$100,000 ROUND TRIP"

cent must speak the same language

Mr. Humphrey. As Mr. Furuseth will tell you, if you put on 75 per cent you have to put on all, because it is a wellknown fact, as he states it, and I presume that it is true, that they do not mix union sailors and Chinese, and when they have 75 per cent as required by the bill, the union will see that they have all, and I think this should be the result. I do not believe English and Chinese sailors would or should work together.

Senator Simmons Do I understand you to see that an

Senator Simmons. Do I understand you to say that an English vessel coming in there with English officers and a Chinese crew could not under this bill clear and make the return trip unless they discharged all those Chinamen

who could not speak English?

Senator Burton. Let me read that portion of the bill to

you, Senator Simmons. Section 12 reads as follows:

"That no vessel, except those navigating rivers exclusively, and except as provided in section 1 of this act, shall be permitted to depart from any port of the United States unless she has on board a crew not less than severally activates and the section of the section enty-five per centum in the second year, fifty per centum in the third year, forty-five per centum in the second year, fifty per centum in the first year, forty-five per centum in the second year, fifty per centum in the third year, fifty-five per centum in the forth year. after the passage of this act, and thereafter sixty-five per centum of her deck crew, exclusive of licensed officers, are of a rating not less than able seamen, etc."

Mr. Humphrey. Then you will see that further down the bill provides that—

"The collector of customs may, upon his own motion, and shall, upon the sworn information of any citizen of the United States setting forth that this section has not been complied with, cause a muster of the crew of any vessel to determine the fact; and no clearance shall be given to any vessel failing to comply with the provisions of this section: Provided, That the collector of customs shall not be required to cause such muster of the crew to be made unless said sworn information has been filed with him for at least six hours before the vessel departs or is scheduled to depart."

Senator Fletcher. Did those Chinese crews desert in

our ports?

Mr. Humphrey. No; Chinese crews will not desert. There is no difficulty along that line. In the first place, they would be immediately arrested and deported, anyway, but the Chinaman keeps his contract. When a Chinaman

signs for a round trip he stays.

The only other line is the German line, which I have

mentioned.

Now, we still have one American vessel on Puget Sound

running overseas.

There is a sort of a sentiment about that vessel to me. It is the only vessel under the American flag running overseas exclusively in the foreign trade that does not receive a subsidy.

Senator Fletcher. Do they carry the mails? Mr. Humphrey. No, sir; except at pound rates. It is Mr. Humphrey. the "Minnesota."

Senator Burton. There were two boats, and one was lost off Japan, I believe. They were very large boats.

Mr. Humphrey. They were the largest freight and passenger carriers in the world.

Senator Simmons. Why do they not claim the benefit

of the act of 1891?
Mr. Humphrey. Because they cannot make the time and

the restrictions are too great.
Senator Crawford. We had the captain of that boat here,

did we not?

Senator Burton. Some one representing the line was here; yes.
Mr. Humphrey. That boat carries a Chinese crew.

r Burton. I believe the officers are American How about the engineers? Senator Burton.

citizens. How about the engineers?

Mr. Humphrey. All except the officers are Chinamen.
They carry exactly the same crews as their competitors over seas. It is estimated that the cost of their crew would be at least \$100,000 additional each round trip under the provisions of this bill. That vessel now is practically operated anyway in connection with the Japanese lines. I neglected to say that there are two Japanese lines operating out of Puget Sound, receiving \$25,000 as a subsidy from their Government for each trip for each vessel. They are small and slow vessels.

It would add to the cost of the "Minnesota's" operation \$100,000 each round trip. As I said a moment ago, it is

already operated, as I am informed, and I think my information is correct, in connection with these Japanese

Now, I do not think that Mr. Hill's sentiment is going to go so far that he is going to pay \$100,000 a round trip additional to keep the American flag when he already has terminals built at Vancouver. All he will have to do is to place the Japanese flag and go up to Vancouver. I do not think there is any doubt but what that will be done if this bill goes upon the statute books.

Senator Burton. They have a separate mess for the Chinese sailors, and the difference in the quality of food that they demand is very great, and that makes a very

considerable difference.

Mr. Humphrey. My recollection is that he stated that in the firemen's department the wages were \$8 a month and the Chinamen boarded themselves.

Senator Fletcher. On page 288 of part 5 of the hearings, Mr. Lacey makes the following statement:

"Like all foreign traders, we employ Asiatic seamen. If it were impossible for us to employ Asiatics as sailors, firemen and waiters it would make the control of men, and waiters, it would mean with the present competition in trans-Pacific trade a discontinuance of our ships in the trans-Pacific service. Therefore, I wish to say that if this bill should become a law the steamship 'Minnesota' would have to be withdrawn."

He further states:

This would mean a direct loss to our port for wages of officers, engineers and subordinate officers, repairs and supplies per annum of \$141,000; \$35,250 for one trip, to

say nothing of earnings on freight, passengers and mails, which I will treat upon later."

Mr. Humphrey. What is the amount he names there?

Senator Fletcher. \$32,500 for one trip. Perhaps you have confused that amount with the amount which he

stated as loss to the port, which was \$141,000.

Mr. Humphrey. I was estimating the loss to the "Minnesota" in this way: Mr. Schwerin said it would mean \$100,000 a trip to his vessel. His vessels, of course, are faster than the "Minnesota" and a little more expensive to run, but I thought it was safe to say that the "Minnesota" heing larger would cost an even amount

sota" being larger would cost an equal amount. Now, here is the situation that I trust you will think of seriously when you come to report this bill. Unfortunately some of the men who have opposed this bill have tried to make it appear that I was an enemy of the American sailor and opposed to provisions for his safety, but, as a matter of fact, I am as much in favor of doing something for the American sailor as anybody. I have studied this question a great deal. I have been on the Committee on the Merchant Marine and Fisheries for 10 years and have heard this question discussed ever since I have been there. I am in favor of safety at sea, but if you are going to enforce the provisions of this bill you are going to destroy the shipping of the Pacific coast and send these vessels over to Vancouver, and you are not going to benefit anybody. They will go over there and go into that port without having to make a single change. They will not have to make a change of a single sailor. The only thing that it does do is to force our shipping over to Vancouver that it does do is to force our shipping over to Vancouver and these vessels out of San Francisco under a Japanese flag. What is the man and the second of San Francisco under a Japanese What is the use, on account of mere sentimental talk, to destroy the shipping of the Pacific coast when it is not going to benefit any American citizen?

This whole proposition and this whole bill is intended for the sole and only purpose of permitting the Sailors' Union to regulate the wages of foreign seamen. I do not know whether is is a good or a bad proposition, and I am not going to attempt to argue it. If you will read Mr. Furuseth's testimony, you will see that all the way through he shows that when a formula way a formula way. he shows that when a foreign vessel comes into an American port he wants to go to those sailors and have them desert, and then they will not go back there until they have agreed with him as a representative of the Sailors' Union as to the wages they shall be paid.

Senator Crawford. If you conceive that to be his scheme, do you think it would work out?

do you think it would work out?

Mr. Humphrey. I do not think it would. He argues very strenuously that the purpose of the bill is to increase very strenuously that the purpose of the bill is to increase very strenuously that the purpose of the world: they are too the wages of the sailors all over the world; they are too low. I know that. I would like to see the wages of the sailors raised throughout the world if you could do it. He argues that this will raise the wages of all the foreign sailors up to the wages. The sailors up to the wages paid to the American sailors. The argument, in my judgment, is perfectly absurd. We are constructing a canal from Lake Union through Puget



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"IT WOULD DRIVE THOSE VESSELS TO VANCOUVER INSTEAD OF TO OUR COAST"

Sound to Lake Washington. The differenc ein height is Lake Union is about one-tenth the size of Lake Washington or less. Now, under the arguments that they present, when we connect those two lakes with the canal as we intend to the smaller lake would raise the larger lake up to its level, and I would think just as much of an engineer that would lay down that proposition as I would of this argument that is made that you are going to increase the wages of 95 per cent of the sailors throughout the world and bring them up to the wages of the 5 per cent in this country.

The whole thing comes back to the proposition that I have laid down, so far as the Pacific Coast is concerned, that it will have no effect whatever upon American sailors or American interests, but it drives our shipping over to Vancouver and puts the San Francisco vessels under the Japanese flag, leaving us upon the Pacific Ocean absolutely without a single American ship. I have taken this question up and talked about it with the business men of Seattle.

They did not take much interest in it at first. When I

They did not take much interest in it at first. When I went before representatives of our chamber of commecre and stated these facts and asked them to point out where I was wrong, they could not do so. I thought perhaps I had studied this question so much that I had reached the point where I did not view the matter properly, and I asked them to point out any fault with the statements I made. If you gentlemen see where there is anything wrong with my statements, I wish you would point out the faults, because I want to know them. I think that this bill as it has passed the House is the most serious menace to the commerce of the Pacific Ocean, especially in connection

commerce of the Pacific Ocean, especially in connection with Puget Sound, that we have ever faced.

When the Panama Canal is completed, as it soon will be, under our present laws you can take a foreign ship and let it load with American products at New York, go through the canal up to Vancouver, British Columbia, and unload that cargo, if it is intended for any place in the United States, and send it right back into this country without the payment of a cent of duty. These foreign ships will all pass through the canal, and when we place upon them those burdens regarding the crews that we propose to place upon them they will all go to Vancouver.

I do not see why they should not. They have all the shipping facilities there. They are spending millions of dollars to improve their harbor at Vancouver, and the government is standing back of them in these projects and

government is standing back of them in these projects and in many of their railroad undertakings. The Canadian government is lending every aid to make Vancouver the great port of the Pacific Northwest. If you place these additional burdens upon the foreign ships, they will go there and not to Seattle or Tacoma.

It would only drive our shipping to Vancouver and under

It would only drive our shipping to Vancouver and under

the Japanese flag.

Senator Crawford. But this provision allowing them to abrogate their own contract and put us in the position

of violating treaties you think is a very serious matter.

Mr. Humphrey. I do. We have a large number of these treaties with the different commercial nations of the world, and taking a broader view of it and leaving out the fact that we especially suffer upon Puget Sound, it does seem to me that it would be extremely bad policy, not to use a stronger term, for us to abrogate these treaties without at least giving foreign countries some opportunity to ex-

press their views upon the subject.

Senator Fletcher. What would you suggest, Mr. Humphrey, to get rid of that involitary servitude, as they call it, or that right to arrest a man and compel him to carry

out his contract?

Mr. Humphrey. I would immediately do in the foreign trade like we have done in the coastwise trade-abolish that for all American vessels—and then it does seem to me that if there is anything in their argument that the sailors are opposed to it, that that in itself would have a

tendency to bring good sailors to the American ships.
Senator Burton. What do you say to the argument that if we pass this bill it will make available for our ships a large class of Americans who now are prevented from taking to the sea because of the hardship of the sailor's

life and these regulations, such as arrest for desertion?

Mr. Humphrey. I do not see that that can make any difference, because of the fact that all of the other nations have these same provisions; they have sailors, and we do not; and I do not see how it is going to make any difference. We have no American ships for them to go on.

Senator Burton. We have a very considerable number

on the coastwise trade and on the Lakes.

Mr. Humphrey. In that trade, you understand, we have abolished long since what they term involuntary servitude. Senator Burton. It is maintained that the wages are

on a lower scale than in the case of any other employment which would require men of the same type; that they are subjected to a number of regulations which this bill in subjected to a number of regulations which this bill in part removes; that they are not sure of safety on board the boats and that this bill gives greater assurance of safety; that this bill provides more amply for their quarters and for their food; and that if these regulations are adopted it will make life on shipboard more attractive than before and will cause native American citizens to seek this line of employment.

Senator Crawford. In other words, it will cause the American plow boy to become a sailor.

Mr. Humphrey. If you mean on foreign ships—
Senator Crawford. On the American ships.

Senator Crawford. On the American ships.

Mr. Humphrey. Well, on the American ships; I am in favor of these things so far as the American ships are concerned. Let us abolish the involuntary servitude on the American ships and see what will happen. I am in favor of the conditions in the bill with regard to additional quarters.

Senator Crawford. You have no objection, have you, as to the sanitary conditions and the conditions with regard

to towels, etc.?

Mr. Humphrey. I have no objection to that. I have no objection to this bill as it applies to American ships.

Senator Burton. And to ameliorating the conditions of

the men on the American ships?

Mr. Humphrey. No. Even though our American ships are manned by foreign sailors, by men who do not think enough of this government to become American citizens, yet I am still in favor of it. However, I think we are assuming a good deal when we attempt to tell foreign nations thow they shall pay their men and what kind of a crew they shall carry without notifying them or giving them an opportunity to be heard. I think that would be an insult to any of the shipping nations of the world. Surely, we should so regard it if it were the other way. I think it would have a tendency to hurt our trade. On the Pacific Coast, as I have said, it would drive those vessels to Vancouver instead of to our coast.

to Vancouver instead of to our coast.

Senator Burton. Are you sufficiently familiar with the conditions on board the boats to express any opinion as to the comparative severity of work in the fire hold and on the deck? Is there not a basis for a distinction between the hours of firemen and those of the deck hands?

Mr. Humphrey. That would be entirely a matter of hearsay. I am not a sailor and am not familiar with it.

My enjoin on that subject would not be worth anything.

My opinion on that subject would not be worth anything.
Senator Crawford. This is brought home very closely

Senator Crawford. This is brought home very closely to you because of what you think is quite a menace and danger to the shipping interests of Seattle and Tacoma; that Vancouver, because of her position, would be the beneficiary of this legislation?

Mr. Humphrey. Owing to our close proximity there, under the provisions of this bill it would be to the advantage of the shippy of the content of

tage of the shipowner to go across to Vancouver. The result will be not that these ships will act differently toward their crews, but they will simply go over to Vancouver. That is the menace. I have given it a good deal If I were running a line of those steamers, and I think those gentlemen would be actuated by the same motives, I certainly would not pay \$50,000 or \$100,000 a round trip for the mere sentimental purpose of going down to Seattle, when I could go over to Vancouver without that charge

I would like to have some figures on Senator Burton. that subject, and I am sure that other members of the committee would, also; figures giving that comparison of the relative cost more in detail. I wonder if you could obtain that information?

Mr. Humphrey. I might be able to, but I do not know how soon. So far as the Japanese lines are concerned, I want you to bear in mind the difficulty that they will have in case of desertion to supply crews of the same character.

Senator Burton. They make four round trips. That is all the "Minnesota" makes in a year, is it not?
Mr. Humphrey. I think so.

Senator Burton. We are very much obliged to you, Mr Humphrey.

Mr. Humphrey. I am sincere in my belief that if you pass this bill it means the destruction of the commercial business of Seattle, Tacoma, and other Puget Sound ports.



STRUCTURAL DIVERSITY OF STRENGTH AND REDUNDANCY IN SHIP CONSTRUCTION

If a standard structural arrangement of details in ship construction could be agreed upon by the shipbuilders of this country, or even of the two coasts of this country, a large, very large, saving of labor and material would undoubtedly accrue to the advantage of all shipbuilders.

The layman may well ask at this point. "Do not the ship classification societies or associations prescribe exact details of construction?"

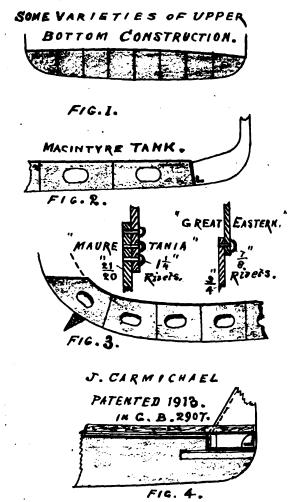
To this I reply that they do not. They do ask that details of construction shall be "equal to rule," but no one asks, or demands, that these shall be as, or according to, rule, so long as elemental requirements governing the general strength are more or less accurately adhered to.

Before illustrating the great diversity of practice obtaining in different parts of our country, or even in neighboring plants, let me say that this infinite variety is in no sense an education from scientific knowledge or formulae, but results from empirical training by rough and ready methods adopted by shrewd leading hands or good practical foremen who were brought up in shipyards having vastly inferior tools, and much less complete prints to guide them than are commonly supplied today.

The Three Sisters

Some years ago there were built three steamers for the Anchor Line, all of the same dimensions, under my superintendence. These vessels were constructed by different builders, and, as the owners had equal confidence in all of them, they gave them liberty to build the vessels according to their usual practice, premising, however, i the general dimensions, dead weight ability, speed class, should be the same in all three. Moreover, the Anchor Line, with the idea that such a form would facilitate loading and unloading of cargo, suggested that the weather deck, which was also the strength deck, should be made without sheer, by which arrangement we looked for uniformity. But in this we were woefully disappointed. One builder maintained that a little sheer from the after end of the forecastle to the stem, and from the fore end of the boiler space to the tafrail, would in no way interfere with the handling of cargo, and would "look nice." Another builder desired to make the deck at center flat; this gave him a rise at the side both forward and aft equal to the camber of the beam. The third builder preferred to make the deck at side flat. This caused a droop both forward and aft, corresponding to the amount of camber in the beam amidships. Thus we got one vessel with a little (ordinary) sheer, another with no sheer, and a third with negative sheer, or "hog." These steamers each being required to carry an equal amount of dead weight of cargo, had no marked dissimilarity of form under water, though one gentleman proposed making the radius of bilge three feet, while another desired this to be slightly over four feet. Finally we agreed that the radius should be fortytwo inches. Still there was a slight variety in form below the waterline. One builder maintained that his steel was above the average in tensile strength, while of equal ductility; he, consequently, secured a considerable reduction in scantlings, which, with the same model, would have given more dead weight ability, but as this could not be demeaded, he cut off an equal weight of displacement at the forward and after ends, which gave him a model of less resistance at full speed. Thus his vessel was a little faster than the other two, or, conversely, she could attain the same speed with less horsepower and consumption of fuel.

Perhaps there was more diversity in the design and construction of the upper bottom than in any other ele-



ments of the structure. One builder gave the upper bottom a slight camber and extended it with a continuous curve out to the bilges, thus: (Fig. 1). Another builder turned it down at the bilges as per Fig. 2. While the third builder made the upper bottom rise up from the center line to above the bilges as per Fig. 3. This illustration shows the same arrangement as may be found in the "Mauretania" and "Lusitania," and when the upper bottom is made parallel to the bottom as it was in the "Great Eastern" and as it well may be for three-fourths of the length of a cargo vessel, it tends to great economy of construction, as then all of the keelsons and diaphram plates may be of the same depth and shape throughout the holds. There is still another form of construction, recently introduced by the British patent of my friend J. Carmichael, of Middlesboro, Eng., which consists in forming the upper bottom with a step down, making a horizontal gutter over the bilges as shown in figure 4. This is a very simple and good device, and I wish Mr Carmichael every success with his new invention.

With regard to the shell, one gentleman preferred lapjoints for his sheer strakes, and other strakes of plating. Another builder proposed double straps for the sheer strakes although he had already a large excess of sectional area of rivets. He evidently had forgotten that the primary object of double straps is to bring the rivets into double sheer.

The extraordinary feature about this diversity is, that though the difference in some of the elements, and in many of the structural details, were drastic; after sev-



eral years of active service, it has not yet been clearly established as to which of the three systems of construction the highest efficiency appertains. But sailors and marine engineers are the most apt class of men upon earth, they can accustom themselves to almost any invironment and to the greatest variety of conditions, and they frequently find a way of making the most unpromising looking craft do the work of the best vessel. Possibly in this instance, the worst vessel had the best crew. I have more than once known of a good steamer being turned into a wreck within three years' service, by an inefficient master and incompetent engineers; and when those on the bridge and the men in the engine room cannot agree it is doubly bad for the property entrusted to their care.

I saw a striking example of superfluous material on the West Coast a few years ago, the French barques "Alice" and "Suzanne," which had rounded the horn many times. These vessels had good doubling strakes on their sheer strakes, but these doubling strakes had not a vestige of butt-straps to them. Now, so far as tenacity was concerned, the doubling strakes were a source of weakness. because the sheer strakes were punched to serve as their straps; and these plates being lighter than the sheer strakes, the latter were weaker at these points than at their own butts.

When a structure is not of uniform strength throughout the excess of material is a cause of

But to find probably the most extreme diversity in ship construction, we must go back to a classical example. The iron shell of the Great Eastern was but three-quarters of an inch thick, i. e., equal to 12/20" of steel. This shell was only single riveted in seams, and double in butts, with %-inch rivets. While the Mauretania has more than a one-inch thickness of shell with triple and quadruple riveting, and one and a quarter inch rivets. See illustration.

This seems to show that there is a great redundancy of strength in many of the elemental units of modern ships, and so there undoubtedly is, and if corrosion were stayed by regular cleaning, ventilating and careful painting, a large reduction of scantlings could be effected without undue risk

But the greatest economy would seem to be procurable by a reduction in riveting, if one only knew where to begin and where to leave off. To define this, more experiments should be undertaken, such as Robert Stevenson instigated before constructing the great Britannia bridge, and such as followed the failure of the great Canadian bridge about five years ago, as the riveting is the most expensive item in ship construction.

The immortal Scott has written that there is but one standard of right, and all others which deviate are oblique and unworthy. Of course this was an ethical admonition, but possibly such terms might be applied to mechanical construction with equal aptitude and potency.

It is presumed that the foregoing may tend to show that, apart from correct ratios governing stability, "form" has but little to do with efficiency in low speed vessels, provided that the block coefficient for vessels of six hundred feet in length and over does not exceed 0.88.

Great economy would accure by making large steamers, for nine-knot speed, without sheer, with parrallel sides and flat bottom, and with a bilge radius of fifty inches, all for fully seventy per cent of the length With such ideas coordinated and extended, nearly the whole of the structure of the midships body of a ship, could be laid off and even constructed from moulds without the heavy expense of templating.

Great diversity may be seen in the form and riveting of

knees, brackets, straps and pillars, but only one of these constructions is the best. Now why not discuss this question to secure uniformity, so that the new workman may find corresponding elements just as they were constructed in "the old shop," and thus eliminate mistakes and loss of time in grasping novel methods of making J. R. O.

U. S. S. PENNSYLVANIA'S PROPELLING MACHINERY

Since our last issue the contract for the construction of the super-dreadnought "Pennsylvania" has been awarded to the Newport News Shipbuilding & Drydock Co. on its own design of propelling machinery, which will consist of Curtis turbines, cruising turbines and reduction gearing.

This combination provides for the maximum of economy with a turbine installation, the turbines, when in use, all running at full power. The cruising turbines and reduction gearing being used at low speed, the gearing being introduced to provide the necessary ratio of speed between turbine and propeller shaft.

While the arrangement adopted appears very satisfactory, the decision was somewhat surprising, as we had believed that the department's attitude relative to the question of turbines versus reciprocating engines for battleships would be in accordance with that outlined in the article on Engineering Developments in the Navy by Captain Dyson, which appears in this issue of the Pacific Marine Review, to which our readers are referred, as this paper treats all the points at issue exhaustively. It, therefore, appears unnecessary to go further into the matter here.

It is well to consider, however, that the modern battleship is a creature fearfully and wonderfully made and altogether expensive. When we pay ten or fifteen million dollars for a vessel we want one that can perform any duty imposed on it and we do not want it to fail at the critical time for the reason that it did or did not have a turbine installation of machinery. From the point of view of economy it would seem as though too much weight might be placed here. The fact that the reciprocating engine is more economical at low speeds, and the turbine at high speeds, is of minor importance as compared to the reliability in emergency. The vessel should be built to meet the enemy, and if this can best be done with a turbine installation let us have turbines. If it can be done with more surety with reciprocating engines. let us have them, but let us not weigh the economy too finely.

VESSELS RECENTLY LAUNCHED.

The largest steel vessels launched during February in the United States are as follows:

"Jason," 10,650 gross, built at Sparrow Point, Md., by the Maryland Steel Co.

"James A. Farrell," 7,705 gross, built at Lorain, Ohio... by the American Shipbuilding Co.

"Vesta," 3,663, built at Camden, N. J., by the New York Shipbuilding Co.

"Lorenzo," 3,063 gross, built at Newport News, Va., by the Newport News Shipbuilding Co.

"Sainte Marie," 2,383 gross, built at Toledo, Ohio, by the Toledo Shipbuilding Co.

"Grace Dollar," 1,327 gross, built at Long Beach, Cal., by the Craig Shipbuilding Co.

Commerce between the Atlantic and Pacific coasts of the United States via the Isthmuses of Panama and Tehauntepec aggregated approximately 125 million dollars



PACIFIC MARINE REVIEW

SEATTLE, WASHINGTON, U. S. A.

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OUR NEW HOME PORT

Seattle, the birthplace of the Pacific Coast's only shipping paper, will not continue to remain the home port of this monthly publication.

The Pacific Marine Review has truly established a world wide reputation as the acknowledged authority on ocean shipping of the Pacific in general and under the American flag in particular, of which reputation the owner has all reason to be proud.

This publication commenced last January its tenth volume. During the past nine years of successful existence the Pacific Marine Review has continually increased its circulation, improved its appearance, and greatly enlarged its issue, which is replete each month with interesting and important matters pertaining to shipping at home and abroad.

The new owner of the Pacific Marine Review, of whom due mention was made in our March issue, will branch into larger and wider fields, and has for this purpose chosen for this publication's new home port California's most prominent city—San Francisco—as this port will be more centrally located on the Pacific with the opening of the Panama canal.

We fully appreciate the loyal support this shipping paper has received in Seattle from leading shipping firms, agencies, shipbuilding companies, supply houses, railroad and transportation interests and all others connected with maritime affairs. However, we assure our Seattle friends that the transferrence of the headquarters of the Pacific Marine Review to the port of San Francisco will materially aid our desire for further expansion and enlagement. The plans for this change, which are now taking tangible form, will not in any way infringe upon the shipping interests of the metropolis of the Northwest, which, with its wonderful harbor and approach thereto, its ever increasingly oversea and coastwise commerce, stands indeed unparalleled as one of the world's greatest ports of the future.

A general agency for the Pacific Marine Review, covering the entire Northwest, will be established in Seattle, under the management of a competent, well known and experienced man, active in the realm of shipping, who will conscientiously take care of all maritime matters pertaining to the states of Washington and Oregon, the territory of Alaska and the province of British Columbia.

To successfully accomplish this change of domicile, without any interruption of service and in the spirit outlined above, our April issue appears somewhat earlier than the usual date of publication. The May number of the

Pacific Marine Review will be the first published in its new home port, San Francisco.

We again wish to emphasize that, although we are moving our headquarters to San Francisco, it is with an earnest desire and endeavor to serve Seattle's interests to the best of our ability and to give the birthplace of the Pacific Marine Review a shipping paper our present and future friends will have every reason to appreciate.

A LESSON TO LEARN

Some of our disappointed politicians, apparently driven to bitterness in their failure to witness the creation and passing of baseless and vicious bills which are generally and pitifully amended or thrown out of the U. S. Senate completely, are evidently again active in their impractical scheming to phrase further petty measures.

We have just witnessed and "Allah be praised" the ousting of the Wilson bill with most radical amendments, and not its passage to the detriment, as its supporters intended, of the maritime interests of our country and the flag of other nations trading to the United States.

We suggest to those who are busily engaged in such lopsided work that they refrain and devote their time to real usefulness in other channels.

Legislation in maritime matters requires special and deep study. It is a well known fact that admiralty law is a specialty and those who are not trained in this particular sphere, but with an ambition to indulge in such, must be considered a failure and would naturally not be sought in the defense of admiralty cases in court. Thus everything pertaining to and in connection with the maritime profession requires life long training and we truly cannot rejoice in seeing our legislators become the laughing stock of the Maritime world.

We indeed need an administration untrammeled by politics and free from the taint of any patronage. It has unfortunately had mighty little of the real thing in the past. Maritime affairs in their most vital branches should be administered for the national benefit by a national government consisting of experts, not inland politicians, with an imperative thought for future essential expansion and the general good that only national supervision can possibly bring to bear.

The Senate Committee on Commerce and those who appeared before the committee during the hearings on the Wilson bill knew their business. This is a splendid lesson for the pseudo apostles who daub in maritime affairs.

A SOUND COMBINATION

Approximately a year and a half ago Mr. Bernard N. Baker, of Baltimore, visited this Coast on his journey west through the principal financial centers of the United States, where he used every effort to arouse the interest of the country and to raise sufficient capital for the formation of a company under the name of the Atlantic and Pacific Transport Company.

The object of this company was to run steamers in the so-called Coastwise trade, between the ports on the Atlantic through the Panama Canal to the principal ports of the Pacific. However, Mr. Baker's efforts then proved in vain.

It is now announced that the Director General of the Hamburg-American Line, Mr. Albert Ballin, who apparently appreciates the value of such an undertaking, has agreed to furnish half of the fifteen million dollar capital necessary to commence the building and operation of steamers for the new line.

With this splendid connection, Mr. Baker should find no difficulty in launching the enterprise anticipated. We understand that Mr. Ballin very wisely makes it a condi-



tion that such agreement be entirely satisfactory to the administration in Washington and there is to be a complete understanding and full compliance with any regulation to prevent any criticisms being made as to the operation of this company as a combination or a trust, in restraint of trade under terms of the present anti-trust law or any future legislation of the United States. This is indeed fair and equitable.

The Panama Canal Act grants the importation of shipbuilding materials free of duty, which would enable Mr. Baker to build the required vessels in the United States at a considerable lower cost than previously anticipated, which should make this undertaking all the more attractive to the American investor.

The partial employment of foreign capital in Americanbuilt vessels should not in any way stigmatize Mr. Baker's scheme. On the contrary, we should rejoice in his courage and consistency and wish him well in the accomplishment of a task which he so enthusiastically undertook a year and a half ago.

Do not let us omit to mention the large amount of American capital invested in vessels flying the flags of other nations, some of which assuredly will make good use of the great inter-oceanic highway now nearing completion and engage these vessels on certain routes, although restrained from competing in our "coastwise trade," which is under the sense of the term somewhat far fetched.

Mr. Ballin expresses the belief that the experience of his company would be a great benefit to Mr. Baker's proposed venture (in which expression we can only coincide) and tend to make it profitable to the American capital invested as well as the large steamship ownery of which Mr. Ballin is the guiding genius.

EXPLOSIVE CARGOES

The lamentable loss of human life and the destruction of property caused by the terrific explosion of three hundred and forty tons of dynamite which recently occurred in the lower harbor of Baltimore should, indeed, be a warning to all and every Pacific Coast port from which such cargoes are shipped or transshipped.

Large quantities of explosives are exported to Alaska by the Du Pont Powder Company, which plant is safely and distantly located from all shipping and other interests on Puget Sound. Under most stringent rules for the provision of safety and under the supervision of this company's competent officials, explosives are carefully shipped, and in case of an unavoidable accident, alone endanger those who are engaged in such hazardous tasks.

Insufficient precautions have in many instances been taken in this port with vessels partially loaded with explosives completing their loading of other merchandise alongside their prospective piers. We understand that more detailed and strict rulings are at present under consideration in Seattle to prevent if possible all danger in the handling and carrying of these explosives, which indeed is highly commendable.

However, even the new proposed rules are lacking in many ways. We suggest that the loading of explosives on any pier or piers should in the future become absolutely prohibitive and should not be permissible as at present, viz., at the Lilly Dock (West Waterway), which is in close proximity to the Fisher Flour Milling Company, or at the Chicago, Milwaukee & Puget Sound Railroad Company's Dock (East Waterway), which again is in the vicinity of shipping and other valuable properties employing considerable labor.

Is the explosion of dynamite already forgotten at Communipaw, near Jersey City, which occurred a few years ago while explosives were loaded at a pier, and resulted in more serious loss of life and property than recently in Baltimore? Does it not appear imperative to remove, as far as possible, from all centers of population the loading or discharging of such dangerous cargoes and of those vessels carrying these cargoes to complete their loading with other merchandise?

We furthermore propose that no steamer should be permitted to carry any explosives without being duly equipped with the modern and safer electric light plant in place of, as is still found today on a few "oldtimers" carrying explosives, the old-fashioned paraffine lamp used so unwisely as running lights, room lights and during night time in cargo holds.

AN UNJUST LAW

The recent fining of the master of the steamer "Mexico Maru" at Tacoma for the reason that opium was found on the steamer by the customs impectors again calls attention to a law that has no place on the statute books of this or any other country. The law as it stands fines the master of a steamer or other craft the value of any opium found on the vessel while in the waters of the United States. In the "Mexico Maru" were found hidden 240 tins of opium, the value of which was about \$2,400, and a sentence to pay that amount was placed against the captain.

The unjust part of it is that the captain is, as a rule, no party to the attempted smuggling, nor is he in a position to detect it. It is manifestly impossible for him to make personal inspection of every one and every thing that goes on the steamer, and the higher officers have their own duties to attend to, which would preclude their being delegated to the task. He certainly cannot make a personal hunt through every nook and cranny of a big steamer and must, perforce, appoint others, and it is these who are the guilty ones. Even detectives hired on shore to prevent the smuggling of opium have been known to have assisted in that which they were hired to stop.

The captain has no part in the hiring of the men who are to be under his command. In fact it is doubtful if the master of a large passenger liner would recognize one-tenth of them as being among his crew. This duty is left to port officers appointed by the owners, and it has developed in many cases that these port officers are in the "ring," or even instigators. The logical conclusion would seem to be that the owners should be held responsible. They are the ones who, through their appointees, hire the members of the crew, and they should be held responsible for the unlawful acts of smuggling. The master is hired for the purpose of navigating the ship and cannot, of necessity, add to his burdens those of a detective.

Now that the importation of opium has been barred, attempts to smuggle it have become more ingenius and crafty. The Pacific Mail Steamship Company has been very unfortunate in this connection, and several of the masters of steamers running to the Orient have been penalized to such an extent that efforts are being made to have the law holding them responsible amended. If the owners themselves were mulcted for the violations it would probably result in a more careful choosing of port officers, and by them of the men to work the steamer. So long as trade in the drug is profitable the attempts to smuggle will continue, and the question is where to apply the penalty to minimize the illegal traffic.

The Hamburg-American Line announces that the total operating profits for the year 1912 have been \$14,125,000, as compared with \$11,000,000 for the previous year.



LET US HEED THE EXAMPLE OF OTHERS

Who would not admire the spirit of Argentine's patriotic citizens who favor the upbuilding of a Merchant Marine in the off-shore trade under the flag of this progressive and wonderful Republic?

Argentine, a vast and rich country, of comparatively small population considering its size, but similarly favored as our own country and possessing enormous resources, a wealth of standing timber, but of more variety, an abundance of various food supplies and precious minerals, today the world's greatest cattle market, as we once were, a nation of lofty ideals and high spirited citizens, and endowed with all that breathes prosperity, is shocked that it has so very few ocean going steamers flying the Argentine flag.

Some of its foremost citizens propose to build within a period of forty months twelve passenger and cargo steamers of twelve thousand tons each to be fitted with refrigerating machinery.

No direct subsidy is asked to assist the operation of such fleet, but a rebate of 80 per cent on the harbor and river dues is requested, in return for which the owners pledge themselves to carry on each steamer ten Argentine seamen or engineers to train for its country's navy.

The company intends to operate under the name of The Argentine Trans-Atlantic Company. This is as it should be. The true policy to favorably assist in competing with other and more advanced nations in maritime affairs.

Do not such policies appear similar to a system of preferential duty as an aid to American shipping, which is favored by our present administration? A scientific practice in just competition can not naturally be attained by a single stroke, but is a matter of growth, to be achieved by repeated revision.

The action of this republic's citizens should indeed spur our legislators to double activity, arouse our country in possession of ideals of industrial persistence and progress from its lethargy in maritime matters to all energy, foresight and determination in the rehabilitation of its Merchant Marine on the seven seas, over which we have squabbled in the past too long!

HYDROGRAPHIC OFFICE TO BE MOVED TO SEATTLE JULY 1st

It is most gratifying to be able to record the removal of the United States Branch Hydrographic Office from Port Townsend to Seattle, where this important office will be more accessible to the different masters and officers calling at Puget Sound ports. The Hydrographic Office is of utmost importance and its service to the shipping interests of the United States has become a necessity. While this excellent work has been appreciated, the Hydrographic Office would like to receive the more enthusiastic co-operation of shipmasters and their officers who could assist in rendering most valuable information to this office who in turn would spread this information broadcast.

We suggest that the different masters realize and appreciate the value of the Hydrographic Office and do all possible to assist in this most praiseworthy work by sending reports of interest and value, which they so often have the opportunity of doing.

The new location in Seattle for the Hydrographic Office has not as yet been selected. We suggest the Smith or the Hoge Building, either one of which commands an unobstructed view of the harbor. Any suggestions from those interested in the new location of this office if sent in the near future to the Hydrographic Office at Port Townsend will be appreciated.

THE PASSING OF A GREAT NAVAL ARCHITECT

By the demise of Sir William White, C. B., LL. D., last month at the age of 68, the science of naval architecture has suffered its greatest loss since the death of Sir Edward Reed and Dr. Francis Elgar a few years ago. About the year 1880 a most interesting discussion was printed by the "Times" through Sir Edward Reed taking exception to a statement by Mr. White to the effect, as I remember it, that with certain forms of ships a good metacentric height was a sufficient guarantee of statical stability without the construction of "curves." This brought forth letters from the late Dr. Francis Elgar and Mr. William John regarding what is known as metacentric stability or stability due to form, which expresses the geometrical relation between the metacenter and the center of buoyancy, which assumes that the moment of statical surface stability is what the righting moment would be, supposing the center of gravity of the hull coincident with the center of buoyancy. The Manual of Naval Architecture, first published in 1877, was a wonderful work for a busy young man of about 30 years of age. The third edition of this work, published by Sir William White in '94, is probably the most reliable and useful work of the kind extant.

Sir William served his apprenticeship in the government dock yards, and soon became assistant to Sir E. J. Reed, then chief constructor.

Mr. White took the usual course to reach the highest position in the constructive department of the government, where promotion is slow, by quitting the service altogether and by becoming manager for Charles Mitchell & Co., Newcastle on Tyne. Here he designed several highly efficient war vessels for foreign countries. This work soon attracted the attention of the British government, and he was, after a short absence from Portsmouth, brought back to be the chief constructor in succession to Sir E. J. Reed, the same procedure having been followed by him and by Sir Philip Watts, who also became manager to Charles Mitchell, as Armstrong, Mitchell & Co., where I met him a few years ago, before he became the chief constructor to the British government.

It seems strange that two chief constructors who wrote such excellent treatise on statical stability should each have suffered severe criticism through the failures of unstable structures. The former chief constructor was considered by many as partly responsible for the capsizing of the "Captain" off Cape Finisterre in 1870, with a loss of 500 men, and the latter resigned from the admiralty shortly after King Edward's yacht, the "Victoria and Albert," fell over onto her beam ends in Pembroke dockyard and had to be cut down to secure sufficient statical stability. However, these were highly scientific and genial men, men whose advancement was due to their own brave and methodical endeavors, and they were always most willing to lend a helping hand to the struggling and ambitious naval architect, and I know not which to admire mostthe splendid services they rendered the profession, by continuous service wherever they could be of use, or the instruction bestowed by their voluminous writings and graphic illustrations. By no means the least valuable services rendered by Sir William of late years was the assistance he gave in designing the great steamships 'Mauretania" and "Lusitania."

Sir William and the other three gentlemen named above formed a great quartet of scientific lore, and for each and all let me say:

"Like some high cliff that lifts its awful form.

Swells from the vale and midway leaves the storm

Though round its base the gathering clouds may shed.

Eternal sunshine settles on his head."



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ENGINEERING PROGRESS IN THE U.S. NAVY

By CAPT. C. W. DYSON, U. S. N.

In preparing an article under the heading of "Engineering Progress in the U. S. Navy," the ground to be covered is of such large extent that, in the greater part, nothing but the merest notice of improvements can be given, and only the most important points of progress will be detailed. The first and most important point of all, as reacting upon the general efficiency of the Navy as a reliable and economical fighting force, is the

Choice of Propelling Machinery for Heavy Vessels of Moderate Speed

In the selection of the type of machinery to be used in the above class of vessels, the following points must be taken into consideration:

- (a) General character of the service which the vessel will be called upon to perform; whether she must keep the sea for long periods, cruising at speeds very much lower than her maximum speeds, or whether she will be called upon for very little slow cruising, but shall be held in readiness for dashes at high speed from a base to any threatened point.
- (b) Greatest economy realized at the conditions under which she will be called upon to operate. This point is important, not only from the point of financial saving in reduced fuel cost, but in the greater case of fuel supply due to the decreased demands.
- (c) Fuel capacity entailed by the demands of the service to which the vessel may be subjected.
- (d) Ease of upkeep of the machinery, and degree to which the vessel, so far as machinery repairs are concerned, can be made self-supporting.
 - (e) Reliability of machinery when driven at high powers.
- (f) Minimum weight and space required for the propelling machinery
- (g) Efficient propellers for maneuvering.
- (h) Minimum of vibration of hull due to machinery in experiments operation,
- (i) Effect of vertical position of center of gravity of the machinery upon the time of roll of the vessel, in fixing the quality of the vessel as a gun platform.

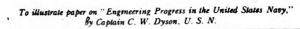
The question of costs of the different types of machinery will not be considered in comparing the relative advantages of the types.

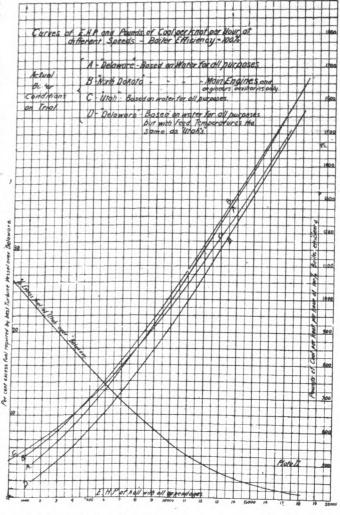
Further, the relative values of turbine reduction gear, electric propulsion and internal combustion engines for propulsion will not be dealt with, for the following reasons: The turbine reduction gear and electric propulsion are under trial in the naval service at the present time, the reduction gear being actually afloat while the vessel fitted with electric propulsion is building.

The results obtained up to date with the reduction gear have been disappointing so far as the expected economy is concerned, the results being vitiated by faulty turbines and too high a number of revolutions of propeller, 135 per minute, for the type of vessel and the speed, 14 knots. The reduction gears have, however, stood up to the work well and show practically no evidences of wear. Results are encouraging and a great improvement is expected when contemplated changes in the turbine have been made.

Electric propulsion not having been tried out in actual service, it is considered preferable to content ourselves with the mere statement that shop tests of one of the units have been very gratifying and promise a successful end to the experiment, so far as economy of propulsion only is considered.

As to the question of propulsion by internal combustion engines, where large powers are required, there appear still to be many important problems requiring solution before units of sufficiently high powers for the purpose desired can be built. The supplanting of the steam engine, both reciprocating and turbine, for important high-power





installations does not appear to be iminent in the immediate future.

Eliminating these three latter methods of propelling naval vessels restricts the choice of machinery for this purpose to the three following methods:

- 1. By means of reciprocating engines.
- 2. By means of steam turbines, impulse, reaction or a combination of the two.
- 3. By means of various combinations of reciprocating engines with turbines.

Comparative Suitability of Each of the Above Methods for Naval Purposes

To assist in reaching a decision as to which of the three methods of propulsion best meets the requirements lettered from (a) to (i), a comparison of the performances of the dreadnoughts "Delaware," "North Dakota," "Utah" and "Florida" can be made; these performances include those on preliminary acceptance trials and those in actual service.

Formerly the favorite method of comparing the relative economics of propulsion of reciprocating engines and turbines was by comparing the water per shaft horse-power of the turbines with the water per indicated horse-power of the reciprocator, in this comparison all mention of the

THE RECIPROCATING ENGINE AND THE TURBINE

large difference between the indicated horse-power required in the one case and the shaft horse-power in the other being carefully neglected.

The method of comparison in use today is the commercial one of "pounds of fuel per knot" at different speeds, and it is on this basis that the curves shown on Plate 2 are constructed.

From the results of the curves it appears justifiable to decide as follows:

Should the duties of a vessel be such that she be required to steam for long periods and long distances at speeds much lower than her designed maximum speed, a less fuel expenditure per day will be required, and consequently a greater cruising radius will be obtained and less frequent recoaling necessitated should reciprocating engines be fitted rather than turbines for propelling purposes.

Should, however, the vessel operate from a fixed base, only doing sufficient cruising to insure that the machinery is kept in efficient condition in readiness for forced runs to any threatened point, the value of fuel economy at low speeds becomes minimized and, where the maximum speed of the vessel does not exceed 21 to 22 knots, either turbines or reciprocating engines may be used, the choice being dependent upon other factors than economics, which are practically equal at these speeds.

In other words, for the conditions (b) and (c), under which the American battleship fleet operates, the reciprocating engine is preferable to the turbine as a propelling engine at the present stage of turbine development.

The Navy Department is, however, thoroughly alive to the advantages to be gained by adopting rotary in place of reciprocating motion in the main propelling machinery of the heavy vessels of the fleet, and, while recognizing the present advantages held by the reciprocating engine in the matter of economy at low fractions of designed power, holds itself ready to discard the reciprocating engine as soon as the turbine designers can demonstrate by actual performance that their claims as to equality of economy at low powers with the older machine have been realized. It was with this object in view that the department decided to install impulse turbines in the "Nevada," and not because the engineers of the department were "wobbling," as has been charged.

Condition (d)-Ease of Upkeep of Machinery.-The claim is frequently made by the turbine advocates that while the reciprocating engine, when new, is undoubtedly more economical than the turbine at small fractions of designed power, this advantage is soon lost in active service, due to excessive wear of piston and valve rings causing large losses through heavy leakage of steam. The turbines, not being subject to such frictional wear, would, on the other hand, retain their original economy indefinitely.

Practical experience with both types of engine in actual service comes very far from justifying this conclusion. In fact, with intelligent supervision, the reciprocating engine, particularly since forced lubrication has been applied, holds its superiority continuously.

When reciprocating engine vessels visit the navy yards for their regular overhaul, the work to be done on the main engines is practically nil, as the machine shops and foundries of the battleships are of ample capacity to take care of all repairs that may be necessary except such as the fitting of a new cylinder or the repair of a fractured The above remarks apply only, however, to hed-plate. ships fitted with forced lubrication, where the wear of bearings and journals has been practically eliminated.

In a letter from the senior engineer officer of the "Dela" ware" the following statements occur:

"January 26, 1912. Examined on each engine one main journal, one cross-head and one crank-pin brass, and found all in good condition. On passage from New York to Guantanamo Bay, during a heavy gale a quantity of sea water entered the crank pits, but no trouble was experienced, although we ran at 19 knots, lubricating with a mixture of 40 per cent oil and 60 per cent sea water."

"Report B. Recently leads have been taken off several cross-heads, after about 30,000 miles steaming without inspection or adjustment, and they have been found in excellent condition with practically no wear.

"Between July 1, 1910, and July 10, 1912, the 'Delaware' has steamed 54,627 miles (knots) without a hot bearing.

About the only wear on the brasses on the forced lubrication system is on the cross-heads, first, then guides and then crank pins. The wearing away of the piston rings apparently starts all the other wear.'

That is, keep the pistons in line and the wear on the running parts is practically eliminated.

These experiences of the "Delaware" are not unique, but are corroborated by the experiences of every reciprocating-engined vessel of the fleet to which forced lubrication has been applied. This system not only ensuring efficient lubrication, but also reducing wear on all running parts, decreases the initial friction of the engines and reduces to a minimum all shock of crank pins, cross-heads and main bearings, thus preventing hammering out of the white metal and all wearing down out of line.

When we turn to the turbine engines, however, the case is quite the opposite. Fully 99 per cent of the troubles that occur with this type of engine are internal troubles, and consist of erosion of blades and nozzles, stripping of blading, heavy corrosion of rotors, diaphragms and turbine wheels, causing destruction of balance. All of these troubles require a perfectly smooth haven in which to make repairs, and the majority of them require dock-yard facilities.

In the cases of the main engines of the three scouts, "Birmingham," "Salem" and "Chester," the "Birmingham," with reciprocating engines, has always been ready for service, while her two sisters have been repeatedly laid up at the yards for overhaul of the main turbines.

Evidence of experience leads to the conclusion that a battleship fitted with reciprocating engines for propelling purposes is much less apt to be forced off her station by necessary repairs to her engines than is one fitted with turbine engines.

Condition (e)-Reliability of Machinery When Driven at High Powers.—From the nature of the two machines, it would appear to be safe to decide this condition as being distinctly in favor of the turbines, as this type of engine is completely free from all reciprocating parts held together by bolts and nuts.

Experience with the "Delaware's" engines, however, leads to the conclusion that where proper care is taken to lock all nuts securely, and to effectively protect the engines against the shocks of reversal of direction of motion, the reciprocating engine can, even here, be regarded as nearly

on a par with the turbine in reliability.

The full-power twenty-four hour run of the "Delaware," made without preparation immediately after her arrival home from Chile, demonstrates this reliability of the present type of battleship engines very thoroughly. As stated, without any preliminary preparation of engines or machinery, the vessel put to sea, and upon getting well clear of the land a full-power run of four hours was started, dur-



MINIMUM WEIGHT AND SPACE REQUIRED FOR THE PROPELLING MACHINERY

ing which time the vessel averaged 21.86 knots per hour. Without intermission the vessel continued on for twenty hours longer, averaging for the full twenty-four hours a speed of 21.3 knots, the ship automatically slowing down as the fires became dirty and the personnel fatigued.

Upon the completion of the trial a radiogram was received from the comamnding officer of the vessel reporting that not the slightest disarrangement had occurred to either the main engines or the auxiliary machinery, and that she was ready for immediate service.

Condition for Minimum Weight and Space Required for the Propelling Machinery.—As already shown, the total heat units required to be absorbed by the boilers, both for Parsons turbines and for reciprocating engines, with battleships of the speed and power that now exist, is practically the same in both cases at full power. This indicates that, for existing conditions, nothing can be saved in the boiler-room weights or space by adopting turbines, as the same boiler power is required in the two cases.

In the engine-rooms, for these powers, however, the reciprocating engine has a decided advantage in both weight and space required.

Thus, in the "Delaware," "North Dakota" and "Utah" the engine-room weights and space required are as follows:

	Delaware.	N. Dakota.	Utah.
Engine-room weights, dry tons	728.26	731.23	864.69
Engine-room weights, wet tons	773.26	785.93	919.80
Engine-rooms, length, feet	44	44	60
Engine-rooms, total width, feet	50.5	50.5	51
Engine-rooms, sq. ft., floor spac	e 2,222	2,222	3,060

While the turbines of the "North Dakota" appear to be about on an equality with the reciprocating engines of the "Delaware" in the matters of weight and space, these turbines were extremely uneconomical. Modern turbines of this type would require an engine-room more nearly equal in length to that of the Utah, and the engine-room weights would be considerably increased.

While the reciprocating engine has a decided advantage in the features of weight and space required, under present conditions, these advantages would disappear should the necessary power to be developed be increased considerably above what is now asked for, and the advantage would rest with the turbine. Should such an increase of power be called for in future designs, or should the ordinary cruising speed be made considerably higher than now used, the Navy Department would undoubtedly abandon the reciprocating engine and adopt one of its rotary rivals for the propulsion of its capital ships.

Condition (g)-Efficient Propellers for Maneuvering.-In considering this condition, the relation of the backing powers of the vessel as compared with the maximum full power ahead, and the time required from full speed ahead until the vessel is dead in the water, will be taken as a comparative measure of this condition.

The backing tests of the "Delaware" and the "Utah" upon their preliminary acceptance trials, where, with the "Delaware" going ahead at 21 knots and the "Utah" at 20, the times taken to bring the vessels dead in the water were, for the "Delaware," 1 minute 52 seconds; "Utah," 4 minutes 44 seconds.

Delaware. Utah.

Backing power divided by ahead power.... 87.5% These results are still further corroborated by the destroyers. These vessels can easily steam ahead at 16 knots under one boiler, but when called upon to maneuver they invariably, as a matter of safety, start a second boiler.

Conditions (h and (i)-Minimum Vibration of Hull;

Steadiness of Hull as a Gun Platform as Affected by Machinery.-In judging these points it seems only fair to base the decision upon the results of target practice of the vessels in service. If this is done, the decision could be given to the reciprocating type of machinery, as the 'Delaware" has just won the championship of the battleship fleet, with the "Colorado," another reciprocating-engine vessel, standing second on the list. From these results it appears reasonable to state that, with well-balanced reciprocating engines, no ill effects on gun fire should be expected.

Conclusions

Basing the choice between reciprocating engines and turbines for battleship propulsion under existing conditions of speed and power upon the above comparison of relative advantages of the two types, the advantage appears to rest most decidedly with the reciprocating engines, and the Navy Department has ruled accordingly.

Combination Systems

In the search for economy of propulsion through a wide range of speeds, various combinations of reciprocating engines and turbines have been proposed, both by the Bureau of Steam Engineering and by the shipbuilders, but only one of the systems has as yet been authorized, and that one is for destroyers. It had not yet been tried out in service. but preliminary shop tests show a good gain in economy of the main propelling engines at cruising speeds. This system, as applied to the destroyers, depends entirely for its gain upon the greater efficiency of the reciprocating engine at the higher steam pressures over the efficiency of high-pressure turbines of the reaction and the highpressure nozzles of the impulse type of turbines, no advantage being gained from increased efficiency of propellers, as the reciprocating engines are on the same shafts as the turbines. From some points of view this combination is undesirable, and the gain in service must be considerable to justify its retention.

With the other combination systems proposed, calculations indicate that if the propulsive efficiency counted upon can be obtained, these systems will all be very much more efficient than either a straight turbine or straight reciprocating engine drive at maximum power, will hold a big advantage over the straight turbine drive through all ranges of powers, and will hold its advantage over the straight reciprocating engine drive until a minimum speed of about 11 knots is reached, when the efficiencies become equal.

The "if" exists, however, and is caused by the danger of the currents thrown to the rear by the big reciprocating engine screws seriously affecting the rate of feed and direction of flow of water to the turbine propellers. In addition, there may possibly be another source of loss due to heavy leakage of steam through the large change valves which must be fitted to control the paths of flow of the exhaust steam from the reciprocating engines.

In all of these systems, to adapt them to naval requirements, it is necessary to exhaust from the low-pressure cylinders of the reciprocating engines at a pressure of not less than 25 pounds absolute, when this engine is operating at full power, and to by-pass as few of the stages of the turbine as possible in order to obtain an increased economy of propulsion through a large range of powers.

Turbine Changes to Produce Increased Economy

The Parsons turbine as it exists in our vessels today is, with very few exceptions, the same as the turbines of this type which were fitted in the initial turbine vessel, the "Chester." The only improvements which have been made consist of changes in blade angles, particularly in the lowpressure stages, an increase in the number of rows of



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Generated on 20 Public Domain, blades in these same stages, and the fitting of nozzles for the admission of auxiliary exhaust steam at several different locations along the steam path.

With the impulse turbine, however, the advance over the original naval turbines of this type, those of the scout "Salem," has been rapid. The number of stages has been very much increased, both in battleship and in destroyer turbines, a drum construction has been adopted for the lower-pressure stages, steam balance for propeller thrusts has been provided, cruising nozzles for low fractional powers have been fitted, and nozzles for utilization of auxiliary exhaust are now supplied as in the Parsons turbines.

That these changes in turbines of the impulse type have been accompanied by increase in economy has been thoroughly demonstrated by experience with the machinery of the destroyers, the economy of the impulse turbine showing up nearly, if not fully, as good as that of the reaction type. No opportunity has as yet been offered to obtain a measure of this economy increase with the battleship types of impulse turbine, nor will such opportunity occur until the "Nevada" is ready for trial.

Improvements in Reciprocating Engines Tending Towards Increased Economy and Reduction in Weight

The steps taken in pursuit of the above objects are:

- 1. Increase in steam pressure at engine.
- 2. Change in design of engine framing.
- 3. Increase in piston speed.
- 4. Use of superheat, but to a small degree only.
- 5. Reduction of clearances in cylinders.
- 6. Decrease of frictional losses through steam ports.
- 7. Positive circulation of steam through steam jackets.
- 8. Reduced back pressure in low-pressure cylinders.
- Increased ratio between low-pressure and high-pressure cylinders, with consequent increased ratio of expansion of steam.

10. Application of forced lubrication to all journals, crosshead guides, eccentrics and thrust bearings.

While the following improvements, both with reciprocating engines and with turbines, have been made:

- 11. Improved condensing apparatus resulting in higher vacuum.
- 12. Rational designs of feed heaters based upon amount of water to be heated and amount of auxiliary exhaust steam available for heating purposes instead of using the old rule of thumb of allowing a fixed number of horse-powers per square foot of heating surface.
- 13. Basing steam-pipe design upon actual rate of flow of steam through the pipes as determined by tests in service.
 - 14. Reduction of feed-pipe losses to a minimum.
 - 15. Improved evaporators and other auxiliaries.

In addition to the above, the reliability of the machinery plant has been improved by—

- 16. Adoption of high-speed, electric-driven forced-draft fans for battleships.
- 17. Turbine-driven forced-draft fans for destroyers, and the most important of all—
- 18. The adoption of oil fuel for both battleships and destroyers.

Editor's Note—For the information of our readers it will be stated that the "Delaware" and "North Dakota" are sister vessels, the former being fitted with reciprocating engines and the latter Curtis turbines. The "Utah" and "Florida" are sister vessels, both being fitted with turbines. While this paper would imply that the "Delaware" is the "Queen of the Seas" in so far as relates to the battleships of our navy, it will be noted that the Curtis turbines to be fitted on the "Nevada" will be of an improved type and the old question as to which is superior, the turbine or the reciprocating engine, will have to be thrashed out again with trials of the "Nevada" and "Oklahoma."

THE USE OF GASES FOR FIRE EXTINCTION AND FUMIGATION ON BOARD SHIP

The discussion on Mr. E. Kilburn Scott's paper on "The Use of Gases for Fire Extinction and Fumigation on Board Ship" was recently held at the Institute of Marine Engineers, Mr. James Shanks presiding.

Mr. G. Canning, in opening the discussion, said he thought the practice of blowing steam into the cargo could only be regarded as a check to initial outbreaks. It had been said that the danger to human beings of systems in which odorless gases were used could be overcome by impregnating the gas; but such a method would depend a great deal upon the operator. Sulphur dioxide had an advantage in this respect on account of its distinctive smell. He thought the possibility of a deposit taking place in the pipes was more likely in the case of flue gas than in the SO2 apparatus. The sulphur dioxide also was more efficacious for fumigation purposes.

Mr. P. Lelow said that with the carbon dioxide system

Mr. P. Lelow said that with the carbon dioxide system 10 cylinders, each of 40 pounds of liquid gas, would be sufficient to deal with a space of about 42,000 cubic feet. The number of cylinders supplied to a vessel generally was 50, and the average total cost of a new installation would not be more than £350 at the outside. This cost could be much reduced in many cases as the system could be coupled up to existing pipes. For a space of 100,000 cubic feet the cost of extinguishing a fire would be about

Mr. D. N. Hunt said with regard to the flue gas system, that particulars should be given as to the temperature of the gas being injected, as this considerably affected the rate of diffusion of the gas. He considered it would be very difficult to fit the 6-inch pipes required in this system in a very complex vessel. For bunker fires of any magnitude the bunkers would have to be closed down. To blow in an odorless inert gas when working the coal would probably have fatal effects. In the analysis of flue gas .5 per cent of CO had been mentioned. A very thick fire would be required to obtain this, and a difficulty would be experienced in keeping up steam under the circumstances.

Professor Armstrong said the carbon dioxide, sulphur

dioxide, steam, and flue gas systems were all based on the same principle, the reduction of the oxygen in the air the problem was to determine which of the four would best serve the purpose. The carbon dioxide system required a somewhat expensive equipment of iron cylinders filled with compressed gas, and there was the disadvantage that when the supply was exhausted, as it might be on a long voyage, the system would be of no value. With the sulphur dioxide system there was the same difficulty, with the additional objection that its use would injuriously affect the metal work of the ship, and Steam had the advantage that it was certain cargoes. always there as long as the boilers were at work. The flue gas system also had that advantage. It was very ingenious as it utilized a waste material, which could be obtained as long as the coal supply lasted, and which had practically the same power as the other gases of acting as an extinctive agent, while being without deleterious

effect upon the ship and cargo.

Mr. J. Craig said the temperature of the flue gas was reduced to about 100° F. when put into the cargo. Experiments had proved that there was no deposit in the pipes with this system. A cooling process, in his opinion, was a necessity in fire extinction.

Dr. G. Harker pointed out that the flue gas itself had a distinctive odor. Gases such as CO2 must have a greater penetrative effect than sulphur dioxide as they were not absorbed. He gave particulars of actual cooling and other experiments.

The Hon. Secretary read a contribution from the author, Mr. E. Kilburn Scott, who was unable to be present. Mr. Scott considered the use of inert gases to be especially valuable for the prevention of spontaneous combustion in cargoes such as coal, cotton, and wool. One of the great advantages of the flue gas system was that in fumigating it could be used when teh holds were full of cargo without the cargo being injured. A distinctive odor could be given to inert gases by the addition of a very small quantity of certain substances such as mustard oil or carbon bisulphide.—Fairplay.



PRACTICAL DUTIES OF SHIPMASTERS By CAPTAIN W. HARRY WILKES, R. N. E.

The school of experience is always a good school, but to a shipmaster it may be very costly and even disastrous, and in any case unnecessarily slow.

The duties of shipmasters are at the present day of so diverse a nature that no one can afford to neglect any opportunity of becoming thoroughly conversant with the usages of the trades in which he may from time to time become engaged.

In the following article the Pacific Marine Review is commencing a series selected from numerous jottings made by Captain W. Harry Wilkes, a retired shipmaster who has been engaged in a variety of trades in all ports of the world. They relate to practical duties rather than to legal duties, since valuable books written by many of the greatest authorities upon the law of sea carriage are usually found in the libraries of most shipmasters.

A shipmaster is frequently confronted with difficulties and, in the early stage of his career, such notes as set forth herewith should be of service to him in making plain many points which might otherwise be perplexing.

Upon First Taking Command of a Vessel

Upon being appointed to the command of a vessel the master should immediately proceed on board, and should the crew be on her in a home port, or the vessel be in a foreign port, he will see that the retiring master hands over the following documents to him:

Register.

Load-line certificate.

Last light bill.

Articles.

Official log-book.

List of bonded stores (inspect seals to see that they are intact).

Suez canal certificate.

Classification certificate.

Anchors and chains certificate.

Boiler certificate.

Boats and lights certificate (if on board).

An entry to the effect that the preceding papers have. been handed over should have been made in the official log-book, and another entry in the same book should be made by the relieving master that the papers enumerated in the preceding entry have been received by him.

In addition to the preceding papers a list of the following papers and articles should have been made out by the retiring master in triplicate, the relieving master, after satisfying himself that the list is correct, will sign them all, retaining one for himself. Should the retiring master not have made any list out, then it is the relieving master's duty to have a list prepared as follows in case of disputes afterwards:

Stores on board of every description.

Catalogue of charts (always work with Admiralty charts)

Compass observation book.

Navigation instruments.

Sailing directions.

Copy of protest (if it has been noted).

Copy of charter party.

Wages accounts.

The relieving master should now get a letter from the owner to the collector of customs; or, if in a foreign port, from the ship's agent to the British consul, asking him to enter the relieving master's name on the ship's register; the master's certificate will be required for this pur-Pose

After having his name put upon the register, if in a

home port, the master will then go to the shipping office and get his name put on the ship's articles as master.

It is possible that the articles will be at the shipping office when the master takes over the command, in which case it is easy to satisfy himself that this document is deposited in the proper quarter before he makes the entry in the official log-book.

If in a foreign port the register and articles will probably be in the hands of the British consul.

Care should always be taken that when the papers are handed over to the master that he examines them carefully to see whether he has been given the register and articles belonging to his own vessel, as in many instances another ship's papers have been put into the ship's satchel by the consular clerks. If this precaution is not taken the master may only find out the mistake upon proceeding to sea.

Ship's Papers a Master Requires at a Home Port

Pratique: After being boarded by the port medical officer, should the crew be found all well and there has been no contagious disease on board since leaving the last port. and after examining the bill of health and finding it correct, the medical officer will give the master a Pratique Paper, which permits him to take the vessel into her berth. This paper will be required at the custom house when entering inwards.

Manifest of Dutiable Ship's Stores: This must be made out before arrival and handed to the custom house boarding officer, who will inspect the stores to see if the manifest is correct. A copy must be left with the customs officer, and another taken to the custom house when entering inwards.

In a home port a list will be required of dutiable goods in the crew's possession, and every member will be required to sign his name for the amount he renders.

In a foreign port it is as well to make out the manifest of stores in triplicate, and to retain a copy on board the ship.

When entering inwards at the custom house the master will require the following documents:

Clearance from the last port, or if the ship has loaded at more than one port, the clearance from each port.

Bills of health from each port touched at from the time he first took cargo on board.

Last light bill.

Pratique paper.

Manifest of ship's stores.

Register, which should have the load-line certificate attached, also the last light bill, for convenience.

Manifest of cargo

The register, with its attached light bill and load-line certificate, will be handed back to him.

At the shipping office he must hand in the following papers: Crew's articles of agreement, and the official logbook.

While at the shipping office he should arrange a time with the superintendent for paying off his crew.

Paying Off Crew: The crew must be paid off before the superintendent of the mercantile marine within forty-eight hours of the ship's arrival at the terminal port in the United Kingdom, or if arriving late on Saturday night or Sunday morning, then they must be paid off not later than the following Tuesday during office hours.

The crew must be given their accounts of wages twentyfour hours before paying them off, if the full forty-eight hours' delay is incurred; but should the crew be paid off on the day following the ship's arrival in the terminal



port, then the acounts of wages may be given them when

After paying off the crew the superintendent will hand the master the B. B. form, which certifies that the master has complied with the regulations and has paid off his crew.

This B. B. form will be required by the superintendent before he will open articles of agreement with a new crew.

Signing on New Crew: After signing on a new crew the superintendent will hand the master the A. A. form, which certifies that the master has complied with the law when signing on his crew and that his crew is complete; the Articles of Agreement, Official Log-Book, Accounts of Wages Forms, and the Latest Advices to Mariners will then be handed to him.

Jerque Note: When the ship is discharged the custom house officer will, after seeing that all the cargo is out, and the seals on the bonded stores are intact, give the master a Jerque Note, which will be required at the custom house when clearing outward.

Should a part of the cargo only be delivered at that port and the ship has cargo for other ports in the United Kingdom, the custom house officer gives the master a Travelling Bill. Frequently this is sent to the next port by post.

Bills of Health: It is important that the master should have a bill of health from the consulate of the country for which his vessel has been cleared at the custom house.

Should the vessel have to call at any port on the way to her port of destination for bunker coal, it is not always necessary to clear for that port; therefore it will not be necessary for the master to obtain a bill of health from the consulate of the country to which the coaling station belongs. If the master has cleared for that coaling station then he must obtain a bill of health. In the writer's experience the port authorities at the coaling stations on the way will not put any difficulties in the way of vessels that call there without having cleared for that port; on the contrary, they will welcome them, for it all means business, and in these days of strong competition they dare not bring their coaling port into disrepute. Therefore it is a saving of expense to clear for the port to which the vessel is bound for cargo purposes, and put into any intermediate ports in distress. Obtain a bill of health from the port authorities of the coaling port, and another from the consulate of the country to which your vessel is bound, before leaving.

It frequently occurs that masters of vessels are induced to take a bill of health from the British consulate when bound to another foreign port; this is quite unnecessary and only swells expenses to no purpose. Should the vessel be bound to any British port or a port in any British colony it will be necessary to obtain a bill of health from the British consul as well as that from the port authorities.

If there is not a consulate of the country to which the vessel is bound at the port she is in, it is usual for that country to have an understanding with some other friendly power that their consulate shall do the necessary business for them. Many of the Latin countries, while having inadequate representation abroad, insist upon every formality being fulfilled; therefore it is the shipmaster's duty, when so circumstanced, to find out what consulate is doing the business for the country to which his vessel is bound.

When bound to any port in the United States a master must be very particular that he has an American bill of health, and at every calling port on the way he must obtain a bill supplemental to the first one, from the American consuls at those ports.

Omission of this will entail serious delay at the Ameri-

can port of destination; this also applies when bound to any American colony.

Ship's Articles: When a vessel is going to be more than twenty-four hours in any port the articles must be lodged at the shipping office if it is a British port, or a port in any British colony; if it is a foreign port, then at the British consulate, whether there is going to be any change in the crew or not.

Ship's Register: Should the vessel be making any prolonged stay for the purposes of taking in or discharging cargo at any foreign port, the register must be handed to the British consul with the articles.

United States Tonnage Certificate: Should any ship foreign to the United States make more than three calls at any port in that country in any year, that ship will be exempt from paying further tonnage dues during the course of the current year. A certificate is handed the master each time he pays the tonnage dues, which should be carefully attached to the register, that they may be produced in the event of the ship making more than three voyages to a United States port in any one year.

If the vessel has been fumigated during the voyage it is necessary for the certificate of fumigation to be produced; in the absence of this certificate it would probably be necessary for the vessel to again undergo this troublesome and expensive operation before the port medical officer would grant pratique.

Protest: Immediately the vessel is entered at the custom house it is the master's duty to go to a notary public, if in a home port, and note protest, or, if the vessel has sustained damage before arriving at her discharging port, and calls at any port for bunkering or other purposes, then at the first port that she happens to call at after sustaining the damage. If in a foreign port, he will note protest at the British consulate.

Should any damage be found to the cargo while discharging the same, it will be advisable to see whether the damage will amount to as much or more than the notary would charge for extending protest. Should the damage not declare itself before the time of departure, then by taking a copy of the protest it can be extended at any place or time within six calendar months of the date of noting protest.

The usual charge for extending protest is about £8 8s, but should it be at all long, the expense will be greater, as the fees are charged by the folio.

The master should present himself at his owner's office each morning while in a home port, and as often as he may from time to time be instructed to do so. When in a foreign port he should present himself at his agent's or charterer's office each morning the office is open for business, in order to sign bills of lading, or to take such instructions as may be necessary.

Should he be required to attend his agent's or charterer's office at any other time, it is his duty to do so. Should circumstances arise on board his vessel that make his presence on board imperative, he must always bear in mind that his first duty is to his vessel and the cargo under his charge.

A shipmaster has at times to exercise considerable tact in the transmission of his business. His relations with his agent should always be of the best; he should treat his agent or charterer with the same deference as he would his owner, and defer to the judgment of the agent or charterer in all things, but he need not take the orders given by them should he think them prejudicial to his owner's

Should the agent urge the master to take some course that the master knows to be a wrong one, it his duty to try to dissuade him from urging that course by every means in his power, and he should only deviate from the



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agent's wishes after he has exhausted all his powers of persuasion and suggestion. Should the issue be great it is the master's duty to communicate the facts to his owner and to ask his advice.

While the shipmaster should, speaking broadly, always act according to his agent's instructions, yet there may be occasions when, if he did so, he would be acting contrary to his owner's wishes or interests. Should such an occasion arise he must feel sure of his ground and then take a line for himself.

When communicating with his owner by cable it is always advisable to use a code that gives the fullest detail for that particular class of business, and, of course, one of the codes that his owner makes use of. It is always better to put in a word too many than to skimp the message and so destroy its meaning. It is to be remembered that you are using a medium (which at the best of times is a poor one) to convey full information upon a subject that you are well conversant with, to one who, up to the time of his receiving your message, would be in ignorance of any events leading up to the circumstances that would cause the master to communicate with the owner. Should the message not be explicit it would not enable the owner to fully grasp the subject clearly. The lack of clearness frequently necessitates the cost of an inquiry message, besides the loss of time and worry occasioned thereby.

Port officials frequently require very tactful treatment, and it is the master who receives these officers on board with cordiality and courtesy that will obtain the best

The indisposition of a member of the crew on arrival at some foreign port at once places a great deal of power in the hands of the port medical officer should he be at all inclined to exercise it, while he can afford valuable help to a master in getting the man placed in some hospital. Many times the port medical officer will stay a little after sunset in order to pass a vessel that is under the command of a friendly master, thus saving the owner much valuable time; in fact there are many ways by which he can give prompt dispatch to a vessel. It must also be borne in mind that a master who is unfriendly with the port medical officer may again visit the port and may then have to ask favors.

Custom house officers in some of the out of the way places have it in their power to assist in the dispatch of a vessel. It sometimes occurs that the necessary permit to work overtime has not been obtained from the custom house through some oversign or forgetfulness, and it is the master who has considerately treated the officer in charge of the vessel that will be allowed to continue the work after hours until the permit is obtained.

A little time spent upon small courtesies to officials will usually be amply repaid, if not at once, then during some later visit to that port; therefore it is the master with tact who can always get his work through with the minimum amount of trouble and a saving of time to his vessel.

(To Be Continued)

The above appears in book form and any shipmaster who wishes to obtain a copy of "Practical Duties of Shipmasters" may do so by writing the publishers, J. P. Lippincott Co., Philadelphia, Pa.

QUESTIONS AND ANSWERS OF SPECIAL INTEREST TO SHIPMASTERS

The replies that are written to the numerous letters of inquiry received by the Hydrographic Office frequently possess an interest for many besides the inquirer himself; and, in order that the labor and research which are required to prepare these letters of reply shall not continue to lie buried in the correspondence files, but may instead become effective in a wider sphere, it is purposed to publish the essential parts of such letters from time to time for the benefit of all who may be interested.

Magnetic Variation

"Would you kindly let me have an explanation on variations, as to how it is measured and what it is measured from, and what accounts for the yearly difference?"

Answer-A freely suspended magnetic needle, after coming to rest, does not everywhere point to the true north, and the saying "true as the needle to the pole" needs some qualification. There is in each hemisphere a magnetic pole, and these poles do not coincide in position with the geographical poles. The north magnetic pole is in about latitude 70° N., longitude 96° W., and the south magnetic pole in about latitude 73° S., longitude 147° E. The directional force of the magnetic needle is influenced principally by these magnetic poles, and thus it is that the direction assumed by the needle varies at different positions on the earth's surface. The direct cause of this variation is not yet conclusively established. Many and various theories have been advanced regarding it, some authorities ascribing it to influences wholly within the earth, others to influences outside the earth, while others yet ascribe it to a combination or both. The view generally held is that the earth may be regarded as a "huge magnet," to which magnetic condition in combination with other influences, within or without, is due the phenomenon known as the "variation of the needle." Now, at any position on the earth's surface the angular difference between the direc-

tion assumed by the needle, after coming to rest, and the meridian passing through the position, is termed the "variation of the needle" for that particular position. If, for example, there should be an angle of 5° east or west according as the needle points to the right or left of true north. In addition to these general causes there may be, for any position, local influences affecting the variation of the needle, such as the proximity of iron or other materials having magnetic properties. On board ship this influence causes what is known as the deviation of the compass, and in making magnetic observations it must be considered.

There are several ways in which the variation is determined, and various kinds of instruments are employed. Primarily, in addition to the needle or compass, it is necessary to have an instrument that will measure horizontal angles. The instruments ordinarily used are a standard compass and an azimuth circle. For refined measurements the magnetometer is used, though the standard compass and azimuth circle give very acurate results. (See Lyons, pp. 240-241.)

As to the cause of the secular or "annual" change, it must be said that during three centuries of time the greatest scientific minds have been unable to solve this riddle.

For a more comprehensive treatment of this subject it would be well to consult some authoritative publications, such as "A Treatise on Electromagnetic Phenomena," by Commander T. A. Lyons, U. S. N.; "U. S. Naval Professional Papers," H. O. Publications No. 13 and No. 17; "Magnetic Declination Tables and Isogonic Charts for 1902, and Principal Facts Relating to the Earth's Magnetism," by Dr. L. A. Bauer, U. S. Coast and Geodetic

Tides at Ends of Panama and Nicaraguan Canals "What is the range of tides on the Pacific side of the Isthmus of Panama,



"What is the range of tides on the Atlantic side of the Isthmus of Panama?

"Do the tides rise and fall on both sides at the same time? If not, and assuming that the Pacific tide rises about 8 feet, suppose it be high tide at San Juan del Sur, Nicaragua, at noon, standard time, what would be the approximate difference in level of the Atlantic at the same time, say at Greytown, Nicaragua (lower or higher)?

"Assuming an average difference of level, and a sea level cut from one coast to the other, would water flow through the cut easterly or westerly?"

Answer—The average time of high water at places on the Pacific coast of the Central American isthmus is three hours after the moon's meridian passage at Panama. The average time of high water at Colon is six minutes, and at Greytown one hour after the moon's meridian passage at Colon. In other words, as Colon and Panama are nearly on the same meridian, it may be stated that high tide will occur at the Pacific or Panama end of the Panama canal, on the average, two hours and fifty-four minutes after high tide at the Atlantic or Colon end; and high tide will occur at the Pacific or Brito end of the Nicaragua canal route two hours after high tide at the Atlantic or Greytown end.

The level of mean tide is practically the same at both ends of both of these isthmian canal routes, but at Panama the tide ranges from 10 feet above to 10 feet below mean sea level, while at Colon it only ranges from 6 or 8 above to 6 or 8 inches below mean sea level, and at Brito or San Juan del Sur the tide ranges, in the extreme, from 4 fet above to 5 fet below mean sea level, while at Greytown it ranges less than 5 inches above and below mean sea level.

Thus with a sea-level canal built along either the Nicaraguan or the Panama route, there would be through currents from the Pacific to the Atlantic at the times of high tides at the Pacific termini, and from the Atlantic to the Pacific at the times of low tide at the Pacific termini.

In answer to the specific question, "assuming that the Pacific tide rises about 8 feet, suppose it to be high tide at San Juan del Sur, Nicaragua, at noon, standard time, what would be the approximate difference in level of the Atlantic at the same time, say, at Greytown, Nicaragua?" we state that at the time of high tide at San Juan del Sur it is two hours after high tide at Greytown, and if the assumed rise of 8 feet at San Juan del Sur is above mean sea level, the difference in level between the two ends of the canal would be about 7% feet.

THE PANAMA CANAL

THERE will be six double locks in the canal; three pairs in flight at Gatun, with a combined lift of 85 feet; one pair at Pedro Miguel, with a lift of 301-3 feet, and two pairs at Miraflores, with a combined lift of 542-3 feet at mean tide. The usable dimensions of all are the same—a length of 1,000 feet and width of 110 feet. Each lock will be a chamber, with walls and floor of concrete, and mitering gates at each end.

The side walls will be 45 to 50 feet wide at the surface of the floor; will be perpendicular on the face and will narrow from a point 24 1-3 feet above the floor until they are 8 feet wide at the top. The middle wall will be sixty feet wide, approximately 81 feet high, and each face will be vertical. At a point 421-3 feet above the surface of the floor and 15 feet above the top of the middle culvert this wall will divide into two parts, leaving a space down the center much like the letter "U," which will be 19 feet wide at the bottom and 44 feet wide at the top. In this center space will be a tunnel divided into three stories, or galleries. The lowest gallery will be for drainage, the middle for the wires that will carry the electric current to operate the gate and valve machinery installed in the center wall, and the upper will be a passageway for the operators.

The lock gates will be steel structures seven feet thick, 65 feet long, and from 47 to 82 feet high. They will weigh from 390 to 730 tons each. Ninety-two leaves will be required for the entire canal, the total weighing 60,000 The leaves are shells of structural steel covered tons. with a sheathing of steel riveted to the girder framework. Each leaf is divided horizontally into two separate compartments. The lower compartment is watertight, for the purpose of making the leaf so buoyant that it will practically float in the water and thus largely relieve the stress upon the bearings by which it is hinged to the wall. This watertight compartment is subdivided vertically into three sections, each independently water tight, so that if the shell should be broken in any way or begin to leak, only one section would probably be affected. An air shaft 26 inches in diameter runs from the bottom compartment up to the top of the gate, and this also is watertight where it passes through the upper half of the leaf.

Intermediate gates will be used in all except one pair

of the locks, in order to save water and time; if desired, in locking small vessels through, the gates being so placed as to divide the locks into chambers 600 and 400 feet long, respectively. Ninety-five per cent of the vessels navigating the high seas are less than 600 feet long.

The highest gates and the highest lock walls on the canal are those of the lower locks at Miraflores, and these locks are the only ones which have no intermediate gates. The total lift from mean sea level to the level of Miraflores lake, 542-3 feet, is equally divided between the upper and lower locks, and under ordinary conditions all should be of equal volume. The waters of the Pacific, however, extend into the lower locks, and the range of tide is from 10 feet below to 10 feet above mean sea level. Furthermore, the area of the upper locks is greater than the lower, because of the omission of the intermediate gates in the latter. The combined result is that the volume of each lower lock is less than that of the upper when the tide is higher than about two feet below mean tide, and the lock is incapable of receiving the full contents of an entire upper lock without causing an overflow of the walls and gates. A portion of the water from an upper lock must be wasted through the culverts or crossemptied into the twin lock. To diminish this waste as much as practicable the volume of the lower locks has been enlarged by increasing the height of the walls and gates to 82 feet, which is the maximum consistent with economy and safety in construction.

In the construction of the locks it is estimated that there will be used approximately 4,200,000 cubic yards of concrete, requiring about the same number of barrels of cement

The locks will be filled and emptied through a system of culverts. One culvert, 254 square feet in area of cross section, about the area of the Hudson river tunnels of the Pennsylvania railroad, extends the entire length of each of the middle and side walls and from each of the large culverts there are several smaller culverts 33 to 44 square feet in area, which extend under the floor of the lock and communicate with the lock chambers through holes in the floor. The large culverts are controlled at points near the miter gates by large valves and each of the small culverts extending from the middle wall feeds



Domain,

in both directions through laterals, thus permitting the passage of water from one twin lock to another, effecting a saving of water.

To fill a lock the valves at the upper end are opened and the lower valves closed. The water flows from the upper pool through the large culverts into the small lateral culverts and thence through the holes in the floor into the lock chamber. To empty a lock the valves at the upper end are closed and those at the lower end are opened and the water flows into the lower lock or pool in a similar manner. This system distributes the water as evenly as possible over the entire horizontal area of the lock and reduces the disturbance in the chamber when it is being filled or emptied.

The depth of water over the miter sills of the locks will be 40 feet in salt water and 41 1-3 feet in fresh water.

The average time in filling and emptying a lock will be about fifteen minutes, without opening the valves so suddently as to create disturbing currents in the locks or approaches. The time required to pass a vessel through all the locks is estimated at three hours; one hour and a half in the three locks at Gatun, and about the same time in the three locks on the Pacific side. The time of passage of a vessel through the entire canal is estimated at ranging from 10 to 12 hours, according to the size of the ship and the rate of speed at which it can travel.

Gate-Moving Machinery

The machinery for opening and closing the miter gates was invented in the office of the assistant chief engineer by Edward Schildhauer, electrical and mechanical engineer, and a patent has been issued on it. It is the subject of the illustration herewith (Plate I). It consists essentially of a crank gear, to which is fastened one end of a strut or connecting rod, the other end of which is fastened to a lock gate. The wheel, moved through an arc of 197 degrees, closes or opens the gate leaf, according to the direction in which it is turned. One operation takes two minutes. The crank gear is a combination of gear and crank, is constructed of cast steel, is 19 feet 2 inches in diameter, and weighs approximately 35,000 pounds. It is mounted in a horizontal position on the lock wall; turns on a large center pin, and is supported at the rim in four places by rollers. The center pin is keyed into a heavy casting anchored securely to the concrete. The crank-gear has gear teeth on its rim and is driven through a train of gears and pinions by an electric motor in a contiguous

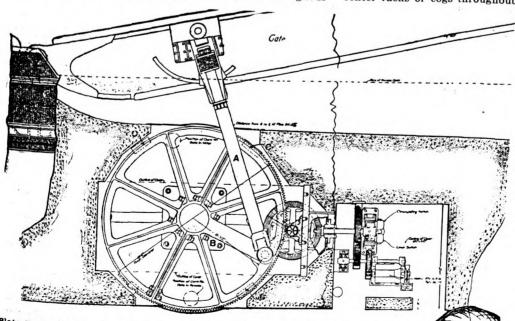
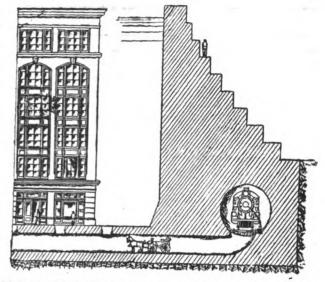


Plate I. Lock Gate Operating Machine Showing Relation of Bull Wheel to Strut and Gate. (A) Strut ber, each weighing on Connecting Rod. (B) Bed Plate. (C) Bearing Wheel.



Side Walls of Locks Compared With 6-Story Building

room. The motor is remotely controlled by an operator who is stationed at a center control house near the lower end of the upper locks. A simple pull of a small switch is sufficient to either close or open a 700-ton gate, the operation being perfectly automatic.

No ship will be allowed to pass through the locks under its own power, but will be towed through by electric locomotives operating on tracks on the lock walls. The system of towing provides for the passing through the locks of a ship at the rate of 2 miles an hour. The number of locomotives will vary with the size of the vessel. The usual number required will be 4-2 ahead, 1 on each wall, imparting motion to the vessel, and 2 astern, 1 on each wall, to aid in keeping the vessel in central position and to bring it to rest when entirely within the lock chamber. They will be equipped with a slip drum, towing windlass and hawser which will permit the towing line to be taken in or paid out without actual motion of the locomotive on the track. The locomotives will run on a level except when in passing from one lock to another they climb heavy grades. There will be two systems of tracks, one for towing and the other for the return of the locomotives when not towing. The towing tracks will have center racks or cogs throughout, and the locomotives will

always operate on this rack when towing. At the incline between locks the return tracks will also have rack rails, but elsewhere the locomotives will run by friction. The only crossovers between the towing and return tracks will be at each end of the locks, and there will be no switches in the rack

Protective Devices

Several protective devices have been adopted to safeguard the gates in the locks. First: Fender

"VESSEL CAN BE BROUGHT TO STOP WITHIN 73 FEET"

24,098 pounds, will be placed on the up-stream side of the guard gates, intermediate and safety gates of the upper locks, and in front of the guard gates at the lower end of each flight of locks. They will prevent the lock gates from being rammed by a ship that may approach the gates under its own steam or by escaping from the towing locomotives. In operation, the chain will stretched across the lock chamber from the top of the opposing walls, and when it is desired to allow a ship to pass, the chain will be lowered into a groove made for the purpose in the lock floor. It will be raised again after the ship passes. The raising and lowering will be accomplished from both sides by mechanism mounted in chambers or pits in the lock walls. This mechanism will consist of a hydraulically operated system of cylinders, so that 1 foot of movement by the cylinder will accomplish 4 feet by the chain. If a ship exerting a pressure of more than 750 pounds to the square inch should run into the fender, the chain will be paid out gradually by an automatic release until the vessel comes to a stop. Thus, a 10,000-ton ship, running at 4 knots an hour, after striking the fender, can be brought to a stop within 73 feet, which is less than the distance which will separate the chain. from the gate.

Second: Double gates will be provided at the entrances to all the locks and at the lower end of the upper lock in each flight, the guard gate of each pair protecting the lower gate from ramming by a ship which might possibly get away from the towing locomotives and break through the fender chain.

Three: A dam of the movable type called an emergency dam (Plate L) will be placed in the head bay above the upper locks of each flight for the purpose of checking the flow of water through the locks in case of damage, or in case it should be necessary to make repairs, or to do any work in the locks which would necessitate the shutting off of all water from the lake levels. Each dam will be constructed on a steel truss bridge of the cantilever type, pivoted on the side wall of the lock approach, and when not in use resting on the side wall parallel to the channel. When the dam is used the bridge will be swung across the channel with its end resting on the center wall of the lock. A series of wicket girders hinged to this bridge will then be lowered into the channel with their ends resting in iron pockets embedded in the lock floor. After the girders have been lowered into place, they will afford runways for gates which can be let down one at a time, closing the spaces between the wicket girders. These gates will form a horizontal tier spanning the width of the canal and damming the water to a height of 10 feet. Another series of panels will then be lowered, and so on until the dam, constructed from the bottom upward, completely closes the channel. When the dam has checked the main flow, the remainder, due to the clearance between the vertical sides of the gates, may be checked by driving steel pipes between the sides of the adjacent panels. These dams will be operated in three movement, and the machinery for operating is, therefore, in three classes, gate-moving. raising and lowering the wicket girders, and hoisting the gates on the girders, all driven by electric motors.

Caisson Gates

To permit examining, cleaning, painting and repairing the lower guard gates of the locks, and the Stoney gates of the Spillway dam, and for access in the dry to the sills of the emergency dams, it is proposed to provide floating caisson gates of the molded ship type. When their use is required the caissons will be towed into position in the forebay of the upper lock, above the emergency dam, or

between the piers of the spillway, and sunk. The caissons will be equipped with electric motor driven pumps for use in pumping out the caissons and for unwatering the locks.

Electric Control of Lock Machinery

The gates, valves and fender chains of the locks will be operated by electricity, and remotely controlled from a central point; that is, there will be a central control station for each of the series of locks at Gatun, Pedro Miguel and Miraflores. In passing a ship through the locks it will be necessary to open and close the miter gates, weighing from 390 to 730 tons; to fill and empty lock chambers containing from three and one-half to five million cubic feet of water; to raise and lower fender chains weighing 24,098 pounds each, and to tow the vessel through the locks. All these operations, except that of towing, will be controlled by one man at a switchboard.

The control system for Gatun locks is typical. Water is let into the lock chambers or withdrawn from them by means of culverts under the lock floors, which connect with larger culverts in the lock walls, through which water is carried from the higher to the lower levels. The main supply culverts are 18 feet in diameter, and the flow of water through them is controlled by rising-stem gate valves, which can be completely opened or closed in one minute. In the center wall the culvert feeds both lock chambers, and therefore at each outlet into the lateral culverts there is a valve of the cylindrical type, in order that water may be let into or withdrawn from either chamber at will. A complete opening or closing of these cylindrical valves takes ten seconds. The miter gates are never opened or closed with a head of water on either side of them, the chambers being first emptied or filled by means of the valve and culvert system. The time required either to open or close the miter gate is two minutes.

A ship to be raised to the lake level will come to a full stop in the forebay of the lower lock, prepared to be towed through one of the duplicate locks by electric towing locomotives. The water in the lower lock chamber will be equalized with the sea level channel, after which the miter gates will be opened, the fender chain lowered and the vessel passed into the first chamber, where the water is at sea level. Then the miter gates will be closed. The rising stem gate valves at the outlet of the main culverts will be closed, while those above will be opened, allowing water to flow from an upper level into the lower chamber, which, when filled, will raise the vessel 281-3 feet, to the second level. This operation will be repeated in the middle and upper locks until the ship has been raised to the full height of 85 feet above the level of the sea. At Gatun in the passing of a large ship through the locks, it will be necessary to lower four fender chains, operate six pairs of miter gates and force them to miter, open and close eight pairs of rising stem gate valves for the main supply culverts, and 30 cylindrical valves. In all, no less than 98 motors will be set in motion twice during each lockage of a single ship, and this number may be increased to 143, dependent upon the previous condition of the gates, valves and other devices.

Each gate leaf, valve and fender chain is operated by a separate motor mounted near the machinery in chambers in the lock wall, the motors acting through suitable gears (or pump in the fender chain) upon the various machines. In each machinery chamber will be erected a starting panel containing contactors by which current will be applied to the motor, and these panels will in turn be controlled from a main unit in the central control house. Some of the machinery chambers at Gatun will be 2,700 feet distant

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Domain,

from the point of control; 90 per cent of them will be within 2,000 feet, and 50 per cent of the total within 1,200

The station from which control will be exercised over the movement of all the machines will be on the center wall at the lower end of the upper flight of locks at Gatun, and similarly placed at Pedro Miguel and Miraflores. It will be in a building raised high enough above the top of the wall to allow a towing locomotive to pass under, a height of 16 feet, and to command an uninterrupted view of every part of the locks. In this house will be a double control board duplicated to conform to the duplication in locks. The control board will be in the nature of a bench or table, 3 2inches above the floor, containing a representation, part model and part diagrammatic, of the flight of locks controlled by the respective series of switches. Standing at his switchboard, the operator will throw the switches and will see before him in model or diagram the progress of the fender chains as they rise and fall, the movement of the miter gates inch by inch, the opening and closing of the gate valves in the main culverts at every stage, the operation of the cylindrical valves, and, in addition, indication of the gradual rise or fall of the water in the lock chambers. The switches controlling the various motors, together with their indicators, will be mounted upon the board in the same relative position as the machines themselves in the lock walls. Some distortion of scale will be allowed, to give room for the switches. The board must not be over four feet in width, in order that the operator may be able to reach beyond the middle of it, and the length of the board is limited to 30 feet at Gatun, and proportionally at the other locks.

The system will be interlocking, so that certain motors cannot be started in a certain direction until other motors are operated in a proper manner to obtain consistent operation on the whole, and to avoid any undesirable or dangerous combinations in the positions of valves, gates or fender chains. In this way and by the use of limit switches the factor of the personal equation in operating the machines is reduced to a minimum, almost mechanical accuracy being obtained. Before the operating pair of valves in the main culverts can be opened, at least one pair of valves at the other ends of the locks, both upstream and downstream, must first be closed. This limits an operator to the act of equalizing water levels between locks, and keeps him from allowing water to flow from, say the lake level to the middle lock past the upper

lock, thus preventing a possible flooding of the lock walls and machinery rooms. Interlocks, devoted to the control of action between the gate valves in the main culverts and the miter gates, prevent valves being opened a lock length above or below a miter gate which is being opened or closed, and thus prevent an operator causing a flow of water while the miter gates are being moved. Interlocks for the cylindrical valves guarding the openings from the center wall culvert to the lateral culverts will keep those of one side or the other closed at all times, except when it may be desired to cross-fill the chambers, when they may be opened by special procedure. An interlock prevents the operator from starting to open a miter gate before unlocking the miter-forcing machine. The miter gates guarded by a fender chain must be opened before the chain can be lowered, and the chain must be raised again before the gate can be closed, or more exactly the switches must be thrown in this order, but the operations may proceed at the same time. The simple interlocks will prevent such a mistake as leaving the chain down through lapse of memory when it should be up to protect the gate.

WEBSTER'S NEW INTERNATIONAL DICTIONARY

One could write a great deal concerning our English language, its history, scope and beauty when used correctly. Pages could also be written regarding pronunciation and orthography.

We will not burden our readers with any long discourse concerning the above, but will merely state that we have found the Webster's New International Dictionary, published by the G. & C. Merriam Co., of Springfield, Mass., most beneficial and a real pleasure to refer to with its many illustrations, quotations of famous authors, etc.

Its appendix is of the utmost value, being easy of access and containing a pronouncing gazatteer, a biographical dictionary, with ten thousand names of noteworthy persons, arbitrary signs used in writing and printing, and a classified selection of pictorial illustrations.

Mr. Wigham Richardson, of the firm of Swan-Hunter & Wigham Richardson, one of the largest English shipbuilders, and who are known all over the world, recently left Hongkong, China, for Honolulu, T. H. Mr. Richardson, accompanied by his wife and young son, is on a trip around the world and will arrive in San Francisco from Honolulu about the middle of April.

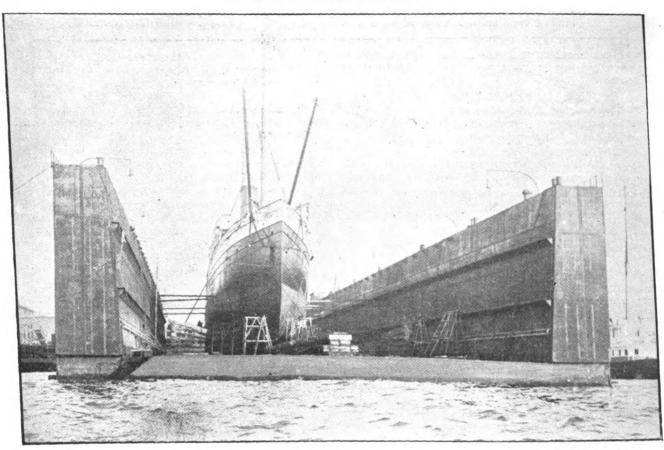


Photo by F. H. Nowell

NEW 12,000 TON FLOATING DRYDOCK OF THE SEATTLE CONSTRUCTION AND DRYDOCK CO.

HE above illustration shows the S. S. "Mariposa" in the new floating dry dock built and owned by Seattle's most progressive and deserving shipbuilding firm, the Seattle Construction & Dry Dock Company. This company has truly made rapid strides in the right direction under the able management of Mr. J. V. Paterson, its president and general manager. The construction and other work now under way at this yard is a vivid proof of the excellent facilities afforded and, above all, the capability of those in charge. Seattle has all reasons to be proud of this large plant, representing an expenditure of many millions of dollars, and employing constantly from twelve to fourteen hundred of its citizens, the payroll for which amounts to many thousands of dollars weekly.

The new floating dry dock, which was completed the early part of February, is a valuable addition not only to the Seattle Construction & Dry Dock Company, but to the port of Seattle. Some of our larger vessels, which in the past had to be docked at the Puget Sound Navy Yard, will now be able to avail themselves of the excellent facilities offered by this modern shipbuilding plant.

The general dimensions of the dock are as follows: Length, 468 feet on keel blocks, which is to be increased later to 600 feet; width, 110 feet; width between walls, 90 feet; height of walls, 35 feet above deck of pontoons. There are six pontoons; draft over sill, 30 feet. The lifting power of the dock, which is of the "Rennie" type, is 12.000 tons.

The six pontoons, which are built of timber, are identical in size and construction. Each pontoon contains 18 trusses on 4-foot centers; the trusses are formed of arch member on top and longitudinal timber on the bottom, these two connected by tie rods and by struts and blocking between members.

The deck of the pontoons upon which the walls are fitted is open to the walls, giving free communication for water between the walls and pontoons.

The center line bulkhead of the pontoons, upon which the keel blocks rest, and which takes the weight of the vessel, is built up of heavy timbers and is water tight. On each side of the center are three bulkheads, one under the inboard side of the tower and two under the bilge blocks.

The connection between the steel towers and pontoons is made by heavy straps, which are bolted to the sides of the towers and to heavy steel straps on the side of the pontoons. The connection on the inboard side of the towers is made in the same way.

The framing of the steel towers is cross-braced and stiffened by diagonals. The plating varies in thickness. The towers are divided into six watertight compartments by bulkheads.

A watertight steel flat extends fore and aft nine feet below top of towers. This serves as a machinery deck, where all the pump and capstan motors are located.

Any pontoon may be detached and self-docked at any time, thus making every part of the whole structure accessible for painting and repairing.

Keel blocks are 4-foot centers and are built up of 12x12foot timbers. The two bottom timbers are of tallow wood and tapered so that they can be driven out and the blocking removed under the keel of a vessel while on the dock Bilge blocks are built up of fir timbers and so arranged that they can easily be altered to suit the shape of different vessels. The bilge blocks are pulled into position and removed by steel wire ropes running to hand winches on top of towers.

When a vessel is in the dock, bow and stern lines are

passed to the capstans on the towers and the vessel placed in position so that the keel is on the center line of the keel blocks. This position is indicated by centering chains extending across from tower to tower at each end of the vessel and having a plumb bob suspended at the

Pumping Plant

The pumping plant consists essentially of six 18-inch vertical, motor driven, centrifugal pumps, having a combined capacity sufficient to dock a 12,000-ton vessel in

Pumps are of the Kingsford Foundry & Machine Works, Oswego, N. Y., make. They are of the vertical, submerged volute type, each having a capacity of at least 500,000 gallons of water per hour against a statis head varying from 41/2 inches to 18 feet 5 inches.

Each pump is driven by a 60-horsepower, 490 r. p. m., 3-phase, 60-cycle, 440-volt, constant speed, vertical type induction motor of Westinghouse manufacture.

All of the pumps, and the operating house from which the entire dock is controlled, are situated on one side of the dock, the operating house being located at one end of the tower on the upper or running deck.

One pump is located in each pontoon near the bottom of the pontoon, and is mounted on a cast iron pedestal.

The suction splits into two 12-inch branches, each one of which is provided with a "Quick Opening" gate valve. Each branch serves one of the two water tight compartments of the pontoon.

The twelve 12-inch gate valves are mechanically controlled, through rods and countershafts, by hand levers arranged in the operating house.

The motors are located on the machinery flat in the tower, each being arranged directly over its respective pump, to which it is connected by a vertical shaft. A flexible coupling is fitted above each pump and for carrying the weight of shafting, etc., a suitable thrust washer and collar is provided in the pump.

Each motor is independently controlled from the operating house by an oil immersed auto starter with automatic overload and no voltage release attachments.

Flooding

For lowering the dock water is admitted through the pumps and 12-inch lines.

Trim Indicators

The athwartship trim of the dock can at once be read by a pendulum inclinometer fitted on the wall of the operating house.

For the fore and aft trim a horizontal pointer, fitted with a lever, is used, a graduated scale and adjustment being provided for one end.

The head of water in each compartment of the dock is recorded by an altitude gauge located in the operator's house. From this gauge a small pipe leads to a suitable place in the respective compartment, and terminates in an inverted cup. A compressed air tank is provided, with a connection to each indicator pipe, so that all water can be forced out of the pipe, thus insuring an accurate reading of the head of water carried by the air pressure.

Capstans and Bollards

For warping ships into position in the dock, the running deck of each tower is provided with eight bollards and three capstans, the capstans being located one at each end of tower and one in center.

These capstans are each driven by a 25-horsepower, 440volt, A. C. 720 r. p. m. motor. The motors are located on the machinery deck below, each motor driving its capstan through gearing and a worm and wheel. The worm wheel is fitted on the lower end of the vertical shaft passing up through the running deck and fitted into the capstan at its upper end.

The capstans are of cast iron, and are designed so that they can be released from the vertical shaft for hand turning; six sockets being provided in each capstan.

A cast iron base provided with groove and ball bearings carries the weight of capstan and shafting.

THE SHIPPING TRADE IN JAPAN

The world's shipping trade, according to Mr. Yukawa, chief of the shipping bureau, department of communications, Japan, has been in anything but a flourishing condition these last few years. Especially in Japan, where not a small number of bottoms were imported in anticipation of the tariff revision of the year before last, doubts were entertained if the increased tonnage could find regular employment. The facts, however, had belied their fears. Beginning with last spring, the active demand for shipping has been maintained throughout the year, a spectacle rarely observed lately. Especially the ships owned by individuals or companies other than the Nippon Yusen Kaisha have made a most memorable showing, not only on the coasting service, but on the routes to the south seas and India, when they have successfully competed with their foreign rivals, the result being that the inequality of demand and supply in the number of ships has finally raised the charter of a small boat of four or five thousand tons displacement to from ten to fifteen thousand yen per month, and very few available at that. The principal causes of this remarkable phenomenon are the general revival of the world's economic activity, and the increase of international trade, Japan having contributed to the bulk of the world's trade by a 20 per cent increase of her exports. The moderation exercised by all the powers of the world since a few years ago in launching new ships is at the root of the present scarcity of vessels. At present the docks of the country are more than fully engaged and

cannot possibly enter into contracts for the building of any new ships. To import foreign built ships at advance of 25 yen per ton on the old tariff is out of the question. No foreign dockyard would undertake to float any new ship until after the lapse of thirty months from now. Whether at home or abroad, it is practically impossible to satisfy the want now being felt for ships of all dimensions in Japan, and this condition of things will, beyond any manner of doubt, continue for a year or so.

That Japanese ships other than those of the Nippon Yusen Kaisha should have been enabled to assume such a position of advantage over their foreign competitors is ascribable to the cheapness of Japanese labor and various advantages enjoyed in stocking coal and other matters. The cash derived from foreign sources must amount to something enormous, forming an important item for the introduction of foreign specie, on which the country ought to congratulate herself. But there is one thing that demands the serious attention of the general public, and that is that the majority of the ships mentioned are wornout craft purchased from abroad for purely speculative purposes, which may serve their ends well in a boom like the present, but as soon as the momentary prosperity has gone must show the natural consequences attendant upon the use of antiquated vessels, their owners not knowing what use to make of them in the end. This must be regarded as a deadly blow to the Japanese shipping trade in general. To prevent this shortcoming, that is, the in-



ability of the Japanese docks to supply the growing need for ships and the consequent necessity of purchasing foreign built vessels in spite of their high prices, so as to answer passing needs, Mr. Yukawa suggests firstly that the materials for naval architecture should be cheapened by revising the tariff and other means; secondly, that the docks should be established for the sole purpose of building cargo boats, so as to do away with the necessity confronting the present docks of keeping in store varieties of materials suited for the building of passenger boats and men-of-war as well; thirdly that great care should be taken not to allow engineers to go to unnecessary expense, since they are prone to commit excesses in their plans from the mere desire to show their craft to the best advantage. Keeping these suggestions in mind, shipowners should regulate their demand for craft by making their calculations on a basis extending over from ten to fifteen years' operations, and by so doing they will not only get rid of the disqualifications besetting them, but will have a long spell of prosperity ensured, placing them in the way to make Japan "the England of the East."

THE INAUGURATION OF THE JAPAN-BOMBAY LINE OF THE OSAKA SHOSEN KAISHA

It is a well known fact that the importation of Indian cotton into Japan for the home consumption of that country is rapidly increasing. This trade was heretofore controlled entirely by contract between the Japan Cotton Spinners' Association and the Nippon Yusen Kaisha.

However, on account of a pool agreement between the Nippon Yusen Kaisha, both on outward and homeward business in this trade, with the Peninsular & Oriental Steam Navigation Co., the Austrian Lloyd Steam Navigation Co. and the Societe Nazianale di Servize Maritime, the Nippon Yusen Kaisha was not in a position to place the necessary tonnage in this market to undertake the carriage of the whole quantity of Indian cotton for Japan, and without causing some handicap to its many other valuable trade connections.

As a consequence the Osaka Shosen Kaisha entered the new field with the support of the Japan Cotton Spinners' Association and also the good will of the Nippon Yusen Kaisha.

The inauguration of the Japan-Bombay regular monthly service of the Osaka Shosen Kaisha is now an accomplished fact.

In order to be in ample time for the season, the steamers for this new service concentrated at Bombay from various quarters with tramp business, and on February 3rd the first liner of the Osaka Shosen Kaisha, the "Saigon Maru," sailed from Bombay, homeward bound, with a full cargo of cotton, to be followed by the S. S. "Indo Maru" and the "Luzon Maru," as per the sailing schedule issued by this company.

UNIFORM BILL OF LADING ADOPTED AT SAN FRANCISCO

The foreign trade department of the San Francisco Chamber of Commerce deserves credit for having been successful in establishing a uniform bill of lading at San Francisco. The department took up with all domestic and foreign steamboat companies calling at that port the question of adopting a standard size and quality of paper, with the result that they have agreed to adopt a bill nine and a quarter inches wide, which is suitable for use in standard typewriters, and a uniform quality of paper.

This will be a great convenience to exporters and also to shipmasters, who in the past have experienced much annoyance with the many varieties of bills of lading used, the colors, size and paper all being different.

B. C .COAL FOR SHIPS CALLING AT PORTLAND

The majority of tramp steamers calling at Portland for cargo are generally owned in England. It seems that these vessels and other foreign tramps are always anxious to procure British Columbia coal for their bunkers, believing that this coal is superior to Washington coal. We have heard many say that Washington coal is the better, but presume this is a matter to be left to those who have to burn it. At any rate, B. C. coal is not handled at Portland and such vessels had in the past to call at Vancouver Island ports for their fuel supply.

At the last general election at Portland, held in last November, a Bill was introduced and favorably voted on by the people giving the Port of Portland authority to furnish coal to ships. The Port Commission is now procuring data relative to British Columbia coal and how it can best be brought to the Columbia River, in order that vessels may procure this coal there for the same amount they would pay if, after taking cargo on the Columbia River, they were forced to go to Vancouver Island for their bunker coal. The Port Commission has not as yet arrived at a definite conclusion as to the manner in which they will handle this coal, but it is practically settled that it will be conveyed in barges from Vancouver Island to the Columbia River.

In so far as Washington coal is concerned, Mr. Talbot, Manager of the Port of Portland, tells us that it is necessary to ship this coal to the Columbia River by rail, and they would therefore have some trouble in getting it delivered at a reasonable price.

BRITISH COLUMBIA IMPROVEMENTS

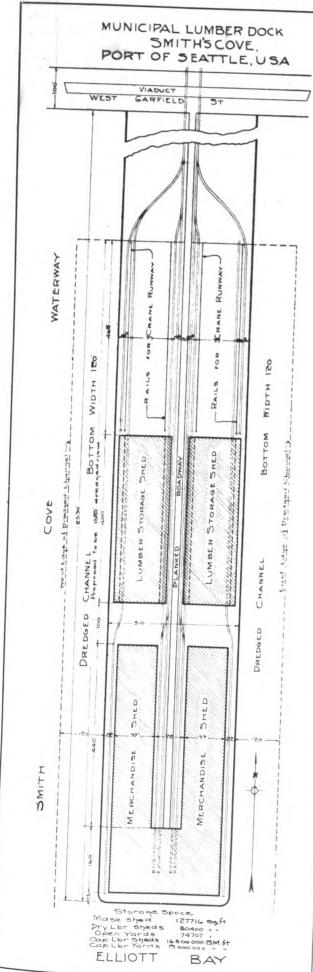
Two million, two hundred and seventy thousand, six hundred and fifty dollars is the sum included in the Dominion budget estimate of the fiscal year 1913-14 for British Columbia improvements, which sum is to be distributed as follows:

River and harbor improvements—wharves: \$151,200; other, \$239,000; dredging Vancouver harbor, \$550,000; dredging plant, \$195,000; buildings, including public buildings, drill halls, etc.,\$1,071,000; telegraph and telephone services, \$64,450.

Of the amount appropriated for British Columbia, Vancouver and its immediate vicinity received \$377,000 for buildings and \$670,000 for harbor and river improvements.

David F. Wilbur, American consul-general, advises that the appropriation for harbor and river improvements in British Columbia for wharves, except where otherwise stated, is to be distributed as follows:

Ainsworth, \$8,200; Beaton, \$8,500; Boswell, \$1,400; Camp Island, \$2,000; Campbell river, \$1,000; Columbia and Kootenay rivers, improvements, \$20,000; Columbia river survey, from boundary, with a view to determine cost of rendering the river navigable, \$15,000; Comax-Atlin-wharf, \$9,000; wharf freight sheds, \$3,600; Digby island, Prince Rupert, \$10,000; East Arrow Park, \$7,500; Fraser river, training pier, \$50,000; lower Fraser river, improvements, \$60,000; Fraser and Thompson rivers, \$18,000; Gray creek, \$5,500; harbors, rivers and bridges, general, \$30,000; Ivermere, \$2,000; Kaslo, \$18,000; Kootenay bay, \$7,500; Massett, \$2,500; Needles, \$7,500; Okanogan river, improvements, \$7,500; Quatsino, \$2,500; Refuge bay, \$6,000; Renata, \$7,500; Sandspit point, \$5,000; Shutty Bench, \$6,000; Sooke harbor, improvements, \$5,000; Thompson river, improvements, \$2,500; Tofino, \$2,000; upper Fraser river and tributaries, improvements, \$40,000; upper Lillooet river, improvements, \$3,000; Williams Head, quarantine station improvements, \$6,000; Willow Point, Kootenay lake, \$10, 000; dredging Vancouver harbor, \$550,000; dredging plant, \$195,000.



PORT OF SEATTLE COMMISSION ISSUES FIRST ANNUAL REPORT

The Port of Seattle Commission recently submitted to the people of the Port District its report for the year ending December 31, 1912, including also the last four months of the year 1911.

Smith's Cove

Following suggestions from numerous authorities upon the lumber business of the Sound, the Commission has felt from the start that it should provide somewhere in the harbor a dock devoted primarily to this business, where cargoes could be assembled in any quantity and at which every mill in the country, great or small, would receive equal consideration. After a careful canvass of all sites, Smith's Cove seemed to offer the best promise for a development of this sort, and the Commission decided to acquire about twenty acres of land on the east side of Smith's Cove waterway, a little west of the Great Northern dock. The purchase has been delayed pending the sale of the bonds, but will now be taken up without delay. General plans have been prepared.

There have been many suggestions and inquiries as to the development of a coal trade with the east coast in return for lumber shipments. There seems to be considerable confidence that a large importation of eastern coal will follow the opening of the Panama canal. To provide for this, if later developments justify these expectations, and particularly to provide coaling facilities for vessels in the harbor, the Commission may decide to erect coal bunkers at this site.

Secondarily, this dock may be used for trans-shipment of freight destined for the interior, and possibly facilities for the storage of grain in bulk may be provided. The situation is admirably adapted to the foregoing purposes, being easily accessible to all railroads and in close proximity to the Interbay yards.

East Waterway

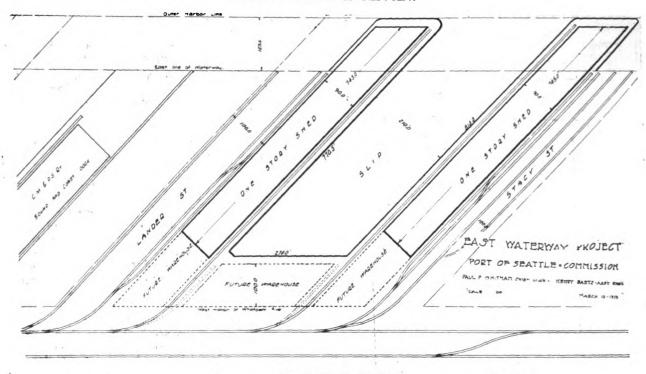
This project is farthest advanced of any of the Commission's program. It embraces the entire block bounded by Stacy and Lander Streets on the north and south and Whatcom Avenue and East Waterway on the east and west. It is a very simple development, consisting only of a central slip 213 feet wide, with wharves and sheds on the two sides. Space will be available also for the erection of permanent warehouses along the inner end of the slip whenever the resources of the District make this possible. Bids have been accepted, at prices which are very favorable, for all the work except the sheds. It is hoped to have the improvement completed and in use within the next twelve months.

Salmon Bay

The Commission proposes to acquire for future development a considerable trace of ground on the south side of Salmon Bay in the immediate neighborhood of the Interbay railroad yards and best situated of any point on the bay for future commercial development. As an initial step in this development the Commission will make provision on the east side of the tract for the purse seiner's fleet of Puget Sound. This provision will consist of slips for laying up the boats, a marine railway for hauling out for repairs, places for drying nets, sheds for storage of the paraphernalia of the boats, oil tanks for supplying fuel, and such other provisions as is necessary for a complete installation. Plans for this work are completed and bids have been accepted for the dreging and bulkhead work. The plant ought to be ready for us within six months.

Central Waterfront

The purpose of this project is to provide a public dock as nearly centrally located as possible and adapted to all



kinds of traffic with the city direct. The Commission would have preferred the site occupied by Piers 3, 4 and 5, but it found the cost and legal complications too formidable to be considered for the present. Accordingly it selected a site further north, between Blanchard and Battery Streets, which is comparatively free of occupancy. Here it is proposed to construct a solid filled pier with a wharf frontage on the north and south about 400 feet long each, and a quay frontage on the Bay side about 800 feet long. Ultimately the wharf and sheds may extend around the entire frontage, but for the present the north front will probably be utilized as a sheltered motor boat harbor. The interior portion of the pier, approximately one acre in area, will be utilized for warehouse and storage purposes. The entire project will be worked out with a view to adapting it to the miscellaneous business that has to do directly with the city. It will probably include a cold storage plant adapted particularly to fruit storage. If such a plant is erected, it is the purpose of the Commission to convert the roof into a recreation pier for public enjoyment.

It is intended to make the wharf sheds two stories high, and the warehouses four or five stories. The second story will communicate by a viaduct over Railroad Avenue on Bell Street directly with Elliott Avenue and thence by less than a five per cent gradient with Pike Street. The first and second stories will also be connected with a roadway, thus giving complete connection between Railroad Avenue and the up-town section on easy grade.

The improvement will also serve as a sea-wall along nearly 1,000 feet of waterfront, and it is the desire of the Port Commission to co-operate with the city and property holders to utilize the material on Denny Hill for the fill, and to secure a permanent improvement of this portion of Railroad Avenue.

Lake Washington Ferry

The primary purpose of this project is to furnish quick ferry service between the city markets and the rich farming sections east of Lake Washington. A route has been chosen which gives the shortest distance across the lake and the quickest service across the city. The west side landing will be at the foot of Yesler Way, whence the

shortest car route leads to the business district. It is hoped that, at an early day, the city will tunnel under the narrow ridge back of the ferry landing so as to connect with the Rainier Valley highway and Dearborn Street, thus giving an almost level grade for freight taffic across the city.

It is expected to build a steel boat with sidewheel propulsion, the length being about 150 feet. The services of a naval architect have been obtained for designing the boat and supervising its construction.

Harbor Island Terminals

This project has occupied the attention of the local public almost to the entire exclusion of the other work of the Commission. The sum voted for it is equal to the total for all the other projects, even excluding the conditional bond issue of \$2,000,000. The project contemplates the immediate acquisition of about 25 acres of ground on Harbor Island, the erection thereon and on the harbor area adjacent of a pier and quay aggregating 4,500 lineal feet of berthing space; the erection of a cold storage warehouse of 120,000 square feet floor space and other warehouses furnishing 320,000 square feet of floor space. together with the necessary equipment, railway tracks, pavement, ferry service, etc. A lease has been negotiated with a private company for the entire development for a period of thirty years, and it is expected to create an enterprise similar to that of the Bush Terminal System in New York

Without following in detail the history of this project it will be sufficient to say that, after weeks of negotiations, the original proposition was worked down into a contract which is far more favorable to the interests of the Port District. It makes the District a partner in the enterprise, restricts the initial development to reasonable limits; makes additional development contingent upon the actual growth of business; gives the Port District full supervisory powers, and in all possible ways guards the public interest. This instrument was approved by a majority of the Commission and signed August 23rd, but its execution by the lessees was purposely deferred until the Port Commission could effect a sale of its bonds and until the lessees had complied with certain conditions. No further action has been taken to date.

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104 Grand Trunk Pacific Dock

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BRITISH DOMINIONS

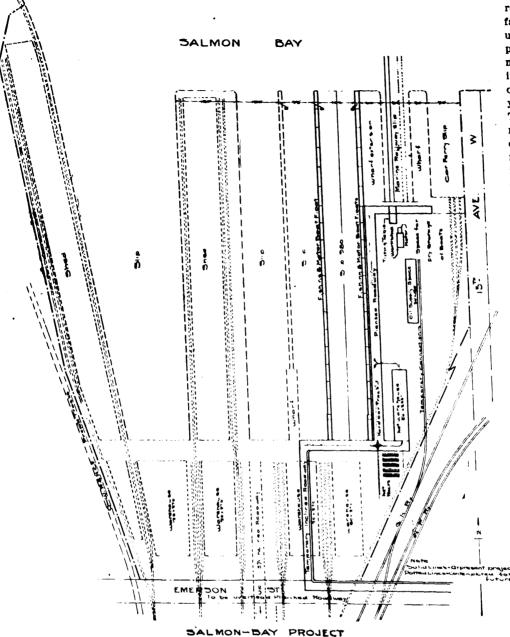
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Bond Sales

The Port Commission, immediately after the election of March 5, took up the question of the sale of the bonds authorized by the vote of the district on that date. It was hoped that these bonds could be sold without waiting the long and tedious process of having their legality and the constitutionalty of the act passed upon by the Supreme Court of the state. The Commission accordingly employed one of the leading bond firms of the country, Caldwell, Masslich & Read, of New York, to pass upon the bonds, and a date was advertised inviting proposals for purchase; but the firm above named informed the Commission that there were certain features of the law which would have to be passed upon by the Supreme Court before it could render a favorable opinion. This left no course open but to bring the matter before the Supreme Court, and accordingly a test suit was brought under the title of Paine vs. The Port of Seattle, and the matter was pushed through with the utmost expedition possible. A decision was reached in much less than the ordinary time consumed in such matters, but still not until September 26th. Unfortunately, the decision as rendered proved unsatisfactory in omitting to pass upon certain essential points, and it was found necessary to secure a modification before a favorable opinion of the bond lawyers could be obtained. This modified decision was rendered November 12th, only two days before the new date fixed for receiving proposals for purchase of the bonds, and not in time to have any effect upon the bids submitted on that date.

In addition to this uncircumstance. favorable financial conditions generally have been adverse to a favorable sale. The political unrest due to s presidential election, the existing uncertainty as to tariff changes, and particularly the acute fear of \$ general European war growing out of the war in the Balkans, have reacted most unfavorably upon the money market. Add to these conditions the fact that the Port District is a new municipality, and that while its bonds are perfectly good, they are excluded, for lack of age, from a considerable section of the Eastern bond market, and it will be seen that the conditions for a favorable sale have been most unsatisfactory.

After two postponements of date of receiving proposals, the first bids were opened November 14

for \$2,350,000 of bonds. The following bids were received:

Harris Trust and Savings Bank, Chicago, together with Dexter Horton National Bank of Seattle, at 92.15 per cent. Seattle National Bank at 90 per cent.

These bids were repected and a new date set for December 19th. The following bids were received:

George H. Tilden & Co., Seattle, 92.50 per cent.

E. H. Rollins & Sons, A. B. Leach & Co., N. W. Halsey & Co., and Merchants Loan & Trust Co., all of Chicago, 90.25 per cent.

Dexter Horton National Bank, Seattle, together with Harris Trust & Savings Bank of Chicago, 92.31 per cent. These bids were also rejected and informal tenders were asked for \$1,000,000 worth of bonds, to be opened

January 3, 1913. The following bids were received:
Weil, Roth & Co. of Chicago and Cincinnati, Plympton,
Gardiner & Co. of Cincinnati and New York, Seasongood
& Mayer of Cincinnati and Chicago, and Eyman & Co. of
Seattle, by their agent, C. L. Zeller, 93.53 per cent and
accrued interest.

George H. Tilden & Co. of Seattle, Chapman, Mills & Co. and Continental and Commercial Trust & Savings

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Barnett & Company

Mole Proprietors .:. Launch and Tug Owners

Commission Merchants, Shipping and General Agents

Fire, Marine or Liability Insurance of All Description

Agents for

The Pacific Steam Navigation Company

Royal Mail Steam Packet Company

and Compania Sud Americana de Vapores

Lloyd's London

Reliance Marine Insurance Co. Ltd. The Northern Assurance (Fire) Company Ltd.

Importers of

Portland Cements, Manila and Wire Ropes. Welsh and Australian Coals, Coke, Etc.

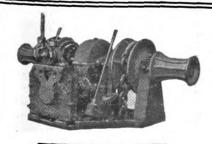
Antofagasta, Chile, South America

Branches in BOLIVIA, ORURO and UYUNI

Polson Iron Works

LIMITED

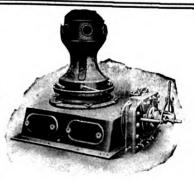
Steel Shipbuilders, Engineers & Boilermakers
TORONTO, ONT., CANADA



WRITE FOR CATALOG
AND PRICES

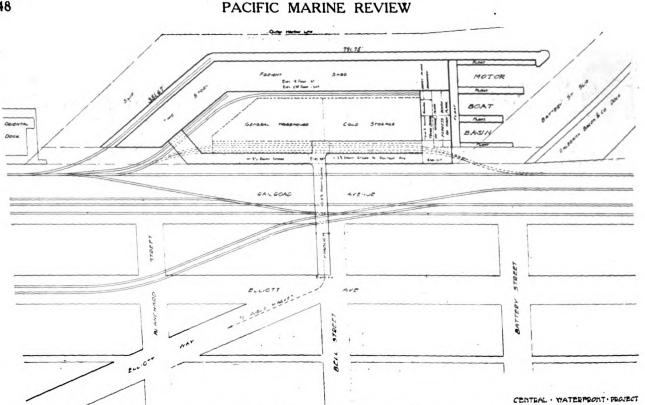
Dake

Steam Deck Capstans
Steam Anchor Windlasses
Pilot House Steam Steering
Gears (Single and Double
Hand Wheel)
Hoisting Engines
Stationary Engines, and
Engines for Direct Attachment



DAKE ENGINE CO.,

Grand Haven, Mich.



Bank of Chicago, by their agent, George H. Tilden, 93.00 per cent for \$500,000, with an option on all additional bonds to be issued prior to July 1, 1913.

E. H. Rollins & Son and A. B. Leach & Co of Chicago, by their agent, Frank W. Camp, 92.65 per cent.

Harris Trust & Savings Bank of Chicago, and Dexter Horton National Bank of Seattle, by R. H. McMichael, 92.79 per cent.

The Commission accepted the bid of Weil, Roth & Co., et al.

Work for Ensuing Year

With the validity of the Port District Act established by the highest judicial authority, with the work on the present program of the Port Commission well under way, the ensuing year should witness important results in actual construction work. There is no reason to doubt the projects will all be well under way and some of them well toward completion by the beginning of the year 1914. Although there has seemingly been much delay, it has all been of a character necessarily encountered in getting new machinery of such magnitude as this into successful operation. The progress of the work has been quite as rapid as that of any other port. San Francisco is face to face with the impossibility of selling her \$9,000,000 of harbor bonds because of the low rate of interest and the legal requirement that they be sold at par. Los Angeles has spent comparatively little public money so far, though she is actively preparing for large expenditures. Portland is proceeding slowly and evidently with much care in the acquisition of sites for her \$2,500,000 program of dock construction. Seattle, with her decks cleared for action as above pointed out, is in better actual position for quick results than any of her sister ports.

Prospective Expansion of Work

The Port Commission will, as rapidly as possible, with the funds available, take up additional projects essential to the proper development of the harbor. Probably the most important of these is the terminal railway project.

It is the intention of the Commission to bring about one of two results: either to secure from the railroads such an arrangement of the terminal business as will eliminate present abuses and drawbacks, or to take over the terminal railway tracks from the Argo yards to Salmon Bay and operate them directly through the Port Commission. F

At an early date the Commission will take up the question of a sheltered motor boat harbor at some place along the general water front, probably in the vicinity of Harrison Street, and also the matter of establishing a general yachting harbor at the extreme upper end of Lake Union for the use of small craft of all descriptions both on the Sound and on the lakes, when the Lake Washington Canal is open to traffic.

The prospective early completion of the Lake Washington Canal will present many problems with which the Commission will have to deal. The most important, and the one demanding first consideration, is that of a proper disposition of the lands to be permanently uncovered by the lowering of Lake Washington. The Commission will ask the State to assign to it the duty of making such a disposition of these lands as will best promote both public and private interests, and it has worked ou the draft of an act designed to accomplish this purpose.

RECENT CHARTERS

S. S. "Indrasamha" taken on time by Sante Fe Railway to load at San Francisco for Japan. Cotton, delivery at San Francisco, re-delivery at Japan.

S. S. "Aymeric" is substituted for "Inveric," which was to load on Columbia River or Puget Sound for Scott, Henderson & Co., Sydney.

Norwegian S. S. "Sverre" taken on time, two years, by Hind-Rolph & Co.

British S. S. "Ikalis" re-chartered by J. J. Moore & Co. for one trip to load at San Francisco to Japan. It is thought the Southern Pacific Railway are the re-charterers and for cotton.

FIRST CONFERENCE OF SEAPORT AUTHORITIES OF THE U.S. RECENTLY HELD IN NEW YORK

Bemarks of Calvin Tomkins, Commissioner of Docks of the City of New York, applicable to our ports on the Pacific.

HE many excellent suggestions made by Calvin Tomkins in the following article are indeed interesting and we find several exceedingly sound recommendations which should not be overlooked in the supervision of our own work in contemplation here and elsewhere on the Pacific Coast.

Comparative discussion of port organization in the United States is now in order. Improvements at each port should be supplemented by the most efficient organization of all of the ports of the country, since the interdependence of ports and terminals is becoming more evident as the crudity of the old methods gives place to a more highly organized system of transportation. Stated meetings of port authorities for publicity and exchange of information will hereafter be of great advantage to the country and to every port.

The government of cities is a local function; but the administration of the ports of the country is a matter of national concern. Port administration necessarily imposes great discretionary powers upon port officials, and mistakes or dishonesty in the exercise of these powers will be disastrous to commerce and industry, as well as demoralizing to local city government; consequently, the greatest publicity, local, state and federal, should everywhere accompany the exercise of such authority. Supplementary to the critical supervision by the cities and the states in which seaports are located, I recommend that the Federal Government should collect statistics, demand regular reports and supervise the commercial exchanges and administrative methods of the ports, in a manner analogous to its supervision over exchanges conducted through the national banks. Publicity is the best corrective for abuse of official discretion. This is a duty which should devolve upon the Department of Commerce and Labor, and under date of December 29th, 1911, I addresed a communication to the department on that subject.

A port should be developed as a unit, under public dictation of the terms on which private carriers, shippers and consignees shall be served. Heretofore, port organization has been too largely relegated to private enterprise and to the railroads, each road attempting to secure the best competitive terminals possible to obtain freight. Few if any such railroad terminals are in themselves profitable. and the heavy charges involved in their great cost and maintenance are absorbed by the general earnings of the system. The rich and enterprising roads have consequently outdistanced the others, and local terminal facilities for shipping over some routes are far better than over others. The Interstate Commerce Commission controls railroad competition, except competition at the terminals where great abuses and inequalities, detrimental to the interests of the railroads and the public, still exists.

The principal factor in port organization is the physical reorganization of railroad terminals so that each shall become a component part of an organic whole port; the primary object being to substitute cheap exchanges between these terminals for expensive transfer charges. The tendency is to abolish present inequalities at the terminals and to afford all roads a parity of opportunity at all parts of the port for receiving and delivering freight. Of course such a policy naturally encounters the opposition of the roads which have by their enterprise and foresight secured the best terminals; but in the public interest and with the co-operation of the Interstate Commerce Commission, this opposition must gradually be overcome.

Competition between the great ports necessitates the

elimination of private profit at the waterfront, and to accomplish this, public control is being substituted for private control and ownership. This process is a drastic one for private owners who are confronted with public competition of a serious character; and it is natural that opposition to modernizing methods should here be encountered. Coincident with the breaking up of private waterfront monopoly, private owners are importuning the public to expropriate their properties; and as speculative values fade with the monopoly on which they were based. private terminal companies are eager to obtain control over the new monopoly which has arisen in the development of marginal terminal railroads.

It is of vital importance to all seaports that these terminal roads should be built with public funds and operated either directly by the public-as they are simply and successfully operated at many ports-or otherwise their agency operation should be maintained at all times under complete public control, so that all carriers and all shippers may have equal opportunities for service.

The dock system, of the more important sections of the port, and ultimately of the port as a whole, should be tied together by marginal terminal roads, and the circulation of traffic over such roads behind the docks should be as public and unobstructed as is the marine circulation of traffic in front of them. This statement embodies the essence of port organization at New York and elsewhere.

The zone system of railroad rate control, recently established by the Interstate Comerce Commission, emphasizes the importance of organizing the great seaports of the country for industrial competition with their inland rivals. This legitimate advantage of seaport manufacturing communities will be relatively effective as each shall provide efficient articulation of traffic for the receipt and shipment of raw materials, fuel and finished products between factories and terminals. Private enterprise, however farsighted and liberal, cannot co-ordinate the functions of an industrial seaport on any such grand scale; and dependence upon private enterprise, which in the end finds its maximum profits in public obstruction, will place confiding communities at a disastrous disadvantage with their more enterprising and exacting rivals. Cheap lands and cheap living convenient public market terminals are necessary for successful industrial expansion.

Baltimore is filling in its riparian lands and leasing them in competition with speculative private developments. New York City contemplates the reservation of a 1,700 foot reclamation strip around Jamaica Bay, well-equipped with modern transportation and terminals, for lease to private interests on the basis of interest and amortization charges only.

The need for a growing plan of development, which shall anticipate the requirements of the future as well as the needs of the present, is a necessity everywhere. Where such a plan exists, private enterprise and public development can be most advantageously co-ordinated; and private enterprise will, at New York and elsewhere, provide the bulk of the capital expenditure for docks and warehouses.

Now that the speculative values of waterfront lands is being destroyed by municipalization of adjacent dockage, the taxation of such lands should be revised. Generally speaking, it is excessive. The city should promptly recognize the change which is taking place and assess the waterfront on the basis of its real value, based on its earning power, which is smaller than heretofore, recouping its



treasury from the correspondingly greater increase in the value of the back lands now more available for industrial and commercial purposes, as a consequence of the better waterfront terminal organization, made possible by the marginal railroad under public control. In short, the taxable value of the back lands will increase immensely with the breaking down of the old-time private monopoly at the waterfront and the substitution of the best modern facilities, which, in themselves, will be comparatively unproductive and should be taxed accordingly.

Dock acquisition and construction are very expensive, but the construction of a marginal railroad is not, comparatively speaking, expensive and will afford the opportunity for the private exploitation of dock properties all along its lines on the one side of it and for warehouses and industrial construction on the other side. Long stretches of unimproved waterfront now useless because remote from terminal facilities will thus be brought into use

Continuity of plan and policy must also be substituted for the fugitive sporadic attempts of recurring political administrations. The only guarantee for persistency is the establishment of a comprehensive plan in the regular mind, which cannot easily be changed without cause.

The opening of the Panama Canal has done much to stimulate port development in this country and elsewhere. Its influence, together with that of the Erie and intracoastal canals, upon the Port of New York will be very pronounced. I regret to say that our city has done little in recent years to prepare for these new responsibilities.

Terminal organization, under the supervision of the United States, along the line of the Panama Canal concerns all the ports; and the government has acted wisely in retaining control over a wide marginal strip on either side, together with the terminals at both ends. The experience of terminal developments elsewhere will here be found valuable as a guide for the federal authorities in developing a terminal plan and administrative policy at Panama.

Municipal procedure in developing port facilities at New York is a demonstrated failure and a national misfortune, since more than one-half of the entire foreign commerce of the country, including that of the Atlantic, Pacific and Gulf ports, passes through this port. The dock department, which, until recently, possessed a large measure of autonomy, has been reduced to the position of being merely one of many other municipal departments charged with the conduct of local city affairs; although its scope is national, and unlike these other departments, its activities have to do with the cheap handling of commodities in and out of the city, affording the basis for the city's successful growth. Very few people in the city understand dock problems and public attention is centered too much on obtaining local city conveniences, to the neglect of the interests of the port. The basic relation of the port to the city is better understood at smaller cities. All of the other city seaports jealously guard their port development, and in some instances, notably at Montreal, New Orleans and San Francisco, the authority of the federal and state governments has been successfully invoked. For a complication of reasons, I doubt if this system would be practicable in New York.

Underneath all formal and open discussions of port development plans there always exist the immense separate private interests of railroads, steamship and real estate owners. All of these interests are immediately and vitally affected by radical changes in port plans and policies; and their potent influence is more often exercised in subterranean ways than in the open.

Thus the innumerable antagonisms of marine and shore front interests seeking privileges and opportunities, legitimate and otherwise, along the undeveloped shores and

over-congested terminals of the harbor. All of these influences make themselves felt in the committee rooms of the board of estimate as well as at the dock department, and a rational consideration of the merits and demerits of the various claims urged can only be attained by a highly specialized port authority. Certainly, it is physically and mentally impossible for the members of the terminal committee of the board of estimate, embarrassed by the pressing requirements upon their time in other directions to personally give the necessary detailed attention to port affairs; and the suggestions of irresponsible and inexperienced subordinates are no more helpful than is the prejudiced advice of interested corporations.

Public opinion is divided, and corporate influence will pretty unanimously be exercised for private, corporate control. For the time being such private control, if established, will not be productive of immediately harmful results; but like all private, as distinguished from public control, the inevitable tendency will be to utilize power to increase dividends by obstruction rather than to increase the efficiency of the port. New York's efforts to create a public port, like the similar attempts at Boston, Philadelphia, Baltimore and Norfolk, deserve to be carefully watched by the country and by the national authorities.

New York will soon have a large fund aggregating many millions of dollars released for port improvements; the plans for these improvements subject to such modification as may be deemed desirable, are now ready for adoption and execution. The law of the state has recently been changed so that the port authorities of the city now have ample powers for organization, administration and construction by the city; and also for encouraging private exploitation of docks and terminals in co-ordination with the public plan.

It will nevertheless be many years before New York can correct the consequences of her protracted delay in organizing the port; and the prompt modernization of port facilities at Boston, Philadelphia, Baltimore, Norfolk and elsewhere is most desirable. Not the least effect of such outside enterprise will be the reflex influence upon New York itself in stimulating our tolerant and somewhat sympathetic city to more fully utilize its unrivalled natural opportunities and to keep step with the march of events.

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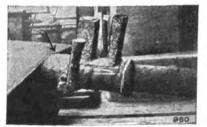
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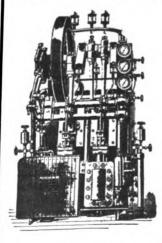
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U. S. CABLESHIP "BURNSIDE" TO BE EQUIPPED WITH BABCOCK & WILCOX BOILERS

After returning to Seattle about April 15th from the Columbia river the U. S. Cableship "Burnside" will proceed to the Puget Sound Navy Yard, where the necessary work will be done on this vessel for the installation of Babcock & Wilcox water tube boilers.

In general this vessel and the machinery in her are in good condition and the vessel was deemed to be satisfactory for further years of service excepting that the boiler equipment would not carry high enough steam pressure to operate the engines satisfactorily. For this reason it was considered advisable to replace the boiler equipment and to put in repair the engines and other parts, and appropriations were made for this purpose. It was thought unwise to repair the present installation of Scotch boilers as new lower half fronts had been put into each boiler a short time ago.

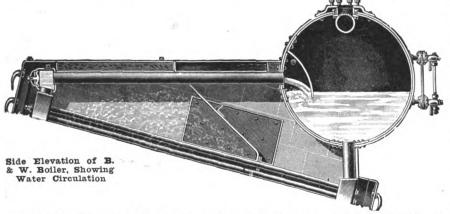
The present Scotch boilers contain a total of a little more than 4,400 square feet of heating surface, and it was considered advisable to install two Babcock & Wilcox boilers containing a total of 4,400 square feet of heating surface and 140 square feet of grate surface. Up to the

stallation. With oil fuel in use it is judged that a single man in the boiler room can handle the fires and feed water very conveniently.

An additional feature which led to the selection of the Babcock & Wilcox boilers for this vessel was the rapidity with which steam could be raised where it was necessary to get the vessel under way on short notice. The government has used this type of boiler so extensively and with such success in the navy and revenue cutter service that they felt it would be advisable to furnish this type of equipment for the "Burnside." Also the economy of the boilers permits of a larger radius of action, which also was a matter of vital importance on account of the small storage capacity for fuel available on the vessel.

The boilers were sold to the government f. o. b. New York City, the government taking advantage of their special freight rate on railroads which have received gran's from the government. The general repairs to the "Burnside" are to be made at the navy yard, Puget Sound, Washington, where the boilers will be installed under the supervision of a foreman to be furnished by the Babcock

& Wilcox Company. There have been a great many boilers of this type installed in the navy yard at Bremerton, and they are thoroughly familiar with this type of equipment. The boilers are readily installed, however, by any competent mechanic and are readily taken care of and all necessary repairs made on them by the regular operating crews on the vessel.



present time the vessel has been operating with coal fuel and the Babcock & Wilcox boilers to be furnished will be equipped to burn coal, but they will also be designed so that they can be readily changed to accommodate the burning of oil.

The boiler room on the vessel is located directly underneath a fidley. The present Scotch boilers are located one on either side of the ship with the firing room forward and the engine room on the other side of a light bulkhead aft. On the sides of the vessel and over each boiler there is located a hanging bunker which follows the curvature of the shells of the boilers. The heavy bracing and ribs of this ship would have had to be cut in order to get the Scotch boilers out from the vessel intact. Such a method of procedure would have cost a great deal, and it was therefore deemed inadvisable to do this. It will be a comparatively simple matter to cut the Scotch boilers in sections and to remove them through the fidley, and the Babcock & Wilcox boilers, on acount of their construction, can be very readily taken in through this same opening and installed in place.

Another feature for consideration was the question of foundations. The present boilers are set on structural foundations directly over and a very few inches above the tanks. There is not very much head room available for the installation of the boilers, and this matter had to be taken into consideration. The relatively small size of the Babcock & Wilcox boilers made them particularly available for the installation and permitted their being so designed and located as to make a most convenient in-

The S. S. "Aroline," now building at the yards of the Union Iron Works Co., San Francisco, is about 60 per cent completed. This ves-

sel is practically a duplicate of the "William Chatham" and "Henry T. Scott," recently completed by this company. The stern wheel vessel for carrying bulk oil for the Standard Oil Co. will be launched, complete with steam up, on the first of the month. The Union Iron Works has considerable work on hand, all the dry docks are busy and the shops are running full force.

The alterations on the White Star liner "Olympic" were completed February 19 at a cost believed to be in the neighborhood of \$1,750,000. In order to complete these alterations at as early a date as possible, 3,000 hands were employed at some stages of the work.

Capt. J. W. Troup, manager of the British Columbia Coast service of the Canadian Pacific Railroad, is still in England and no authentic information has as yet been received in Victoria as to the possible builders of the two new turbine liners for this company's Pacific Coast service. It is rumored that these vessels are to be of 15,000 tons and that they will be completed fifteen months after the contract is let.

Building has begun on the Associated Oil Co.'s \$1,000,000 refinery near Concord, Cal., a wharf 1,975 feet long will extend into Suisun bay to give oil to ocean going steamers. The refining plant of the Independent Producers' Agency at Port Harford will be started soon and pushed rapidly to completion. California's production of oil in 1912 was over 90,000,000 barrels.

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Via Pacific Coast Steamship Co.

Cruises of S. S. S. okane June 18—July 2, 16, 30—Aug. 13

Excursions of S. S. City of Seattle June 18, 30—July 12, 24—Aug. 5, 17

S. S. State of California July 6, 18, 30—Aug. 11, 23

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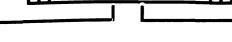
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TWO-CYCLE, 6-CYLINDER, DIRECTLY REVERSIBLE AMERICAN DIESEL ENGINE

The Seattle Construction & Drydock Co. has just received the latest type of Diesel engine, which is to be installed in one of the two Chilean submarines they are now building for the Electric Boat Co.

This engine is a 2-cycle, 6-cylinder, directly reversible, high speed engine, weighing approximately ten tons. It is the first engine of this type to be built in America and is the very last word in the evolution of the Diesel engine either here or in Europe.

This engine is the product of the New London Ship & Engine Co., of Groton, Conn., an agency of which is maintained at 24 Colman Dock, Seattle.

As there seems to be considerable question about the use of Californian asphaltum base fuel and crude oil in Diesel engines, we wish to inform our readers that as a result of close inquiry we learn that our asphaltum base oils are being used without difficulty in the high speed Diesel engines built by this company and installed in submarines on Puget Sound and at San Francisco.

The following is a brief account of the record performance of a 300 b. h. p. high speed engine such as mentioned above.

At 4 p. m. on Thursday, the 12th of February, this engine was started under full power to make what was the longest and most exacting test any naval engine, steam, gas or oil, has ever been subjected to. This was a full power, continuous, 72-hour run at 500 r. p. m., which involved steady operation for three days and three nights. When it is considered that tests of this nature are seldom for more than six hours and that the official trials of naval vessels as the rule last only four hours at full power, the magnitude of this undertaking can be appreciated.

In order to conduct this test, the engineers were divided into three groups, each group taking a turn of four hours on and eight hours off, just the same as they would have had they been standing watch at sea. As a matter of fact, there was very little for these men to do with the exception of occasionally filling up the tanks supplying fuel to the engines. Although the engine was running the whole time at full power there was no undue heating, and although observations of temperatures and pressures were taken every hour, there was no change from the beginning to the end.

The fuel consumption averaged .57 pounds per h. p. hour. This compares with from two to three pounds of coal per h. p. hour in a steam engine. It means that the vessel for which this engine was intended can travel four to five times the distance on a ton of oil than on a ton of coal.

Consumption of lubricating oil was also very moderate, being only about one gallon per hour. No attempt was made to economize on the lubricating oil for the reason that the test was considered very severe.

So far as can be ascertained, the longest full power endurance trial made in Europe on an engine of the same general type was a 60-hour run made at Neuremburg.

It is thus seen that the American builders have far surpassed the performance of the Germans, although the latter have been working with oil engines for fifteen years.

The officials of the New London Ship & Engine Co. have all expressed themselves as highly pleased with the results obtained.

We understand that this company contemplates the erection of a plant at Seattle for the construction of both marine and stationary Diesel heavy oil engines.

On and after March 1, 1913, the general passenger department of the Pacific Mail S. S. Co. will be located at room 384, Flood Building, Powell and Market streets, San Francisco, Cal.

INSTITUTE OF NAVAL ARCHITECTS HOLD MEETING

The Institute of Naval Architects, founded in 1860, held its 1913 session on March 12th, 13th and 14th, in the Hall of the Royal Society of Arts, John street, Adelphi, London, E. C. The following papers, extracts from which will be published in an early issue of the Pacific Marine Review, were read at the session:

- 1. "Recent Developments in Battleship Type," by Alan H. Burgoyne, Esq., M. P., Associate.
- 2. "The Influence of Air-Pumps on the Military Efficiency of Turbine-Engined Warships," by D. B. Morison, Esq.. Member of Council.
- 3. "Mechanical Gearing for the Propulsion of Ships," by the Hon. Sir Charles A. Parsons, K. C. B., D. Sc., F. R. S., Vice-President.
- 4. "Compressed Air for Working Auxiliaries in Ships Propelled by Internal Combustion Engines," by W. Reavell, Esq., Member.
- 5. "The Energy Systems Accompanying the Motion of Bodies Through Air and Water," by Professor J. B. Henderson, D. Sc., Associate.
- 6. "The Calculation of Stability in Non-Intact Conditions," by Professor W. S. Abell, Member.
- 7. "Notes on Modern Airship Construction," by Baron A. Roenne.
- 8. "The Longitudinal Stability of Skimmers and Hydroaeroplanes," by J. E. Steele, Esq., B. Sc., Associate Member.
- 9. "On Large Deck Houses," by J. Foster King, Esq., Member of Council.
- 10. "Methodical Experiments With Mercantile Ship Forms," by G. S. Baker, Esq., Member.
- 11. "Launching Declivities for Ships, and Their Influence Upon Poppet and Way-End Pressures," by A. Hiley, Esq., Associate Member.
- 12. "Stresses in Stayed Cylindrical Shells," by C. F. Stromeyer, Esq., Member of Council.
- 13. "The Distribution of Stress Due to a Rivet in a Plate," by Professor E. C. Coker, M. A., D. Sc., Associate, and W. A. Scoble, Esq., B. Sc., Wh. Sc.
- 14. "Stresses in a Plate Due to the Presence of Cracks and Sharp Corners," by C. E. Inglis, Esq., M. A.

TRIAL TRIP OF 155-TON OIL ENGINE FISHING SCHOONER "KNICKERBOCKER"

Recently the official trial trip was made of the fishing schooner "Knickerbocker," owned by the New England Fish Company, of Boston. This ship, which is of a modified knockabout type, is equipped with two 100-horsepower Blanchard marine oil engines, and with her sister ship, the "Bay State," will depart at an early date for Seattle. The ship is 125 feet L. O. A., 102 feet L. W. L., 24½ feet B. W. L., with a mean draft of 10 feet.

The ship was commanded by Captain Robert Lathigee, and among the forty persons on board were Wolcott Remington, designer of the engine; Thomas F. McManus, designer of the boat, and Messrs. Goodspeed and Shaw, of the New England Fish Company, and Mr. Plumb, of the Blanchard Machine Company.

The fuel oil was the Standard Oil Company's 28-degree Baume, of about 19,400 B. T. U. per pound. The "Knickerbocker" left Gas wharf, Gloucester, at 11 a. m. and arrived at T wharf, Boston, at 1:45 p. m., giving an average speed for the distance of 32 nautical miles of 11.6 knots.

Considerable interest is being exhibited in Gloucester and at T wharf in these boats, and especially in the oil engines, which are really of a semi-Diesel type, inasmuch as they approach the wonderful economy of the Diesel but are within reach of the pocketbooks of the fisherman and do not use excessive compressions.



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T. W. TAMPLIN & CO.'S REVIEW OF SHIPPING

T. W. Tamplin & Co., ship brokers of 83 Gracechurch street, London, E. C., have furnished us with a copy of their review of shipping in general for the year 1912, which we publish herewith:

The improvement in freights which commenced in July, 1910, and which (with a few small relapses) continued during 1911, increased to a surprising extent during 1912, and ship owners generally received a very handsome return on their investments; a return that, considering the long period of depression they had gone through, they were, in our opinion, fully entitled to. Although there was a drop in freights during the last weeks of 1912, the present rates are still very remunerative; there is, however, a factor which will affect the profits for the present year, viz.: the great increase in the cost of running steamers.

The improvement of freights during 1912 led to a large amount of orders being placed with the ship builders, with the result that the quantity of steam tonnage under construction at the end of last year was 1,960,330 gross tons.

This is not only 450,265 gross tons in excess of the tonnage under construction at the end of 1911, but is far greater than at any previous time.

Owners of tramp steamers seem (not without reason) to derive satisfaction from the fact that of the total number of steamers building, tramp steamers form a much smaller percentage than hitherto, but against this it must be borne in mind that for the last twenty years "liners" have been encroaching upon and, in some cases, practically monopolizing, trades which at one time were left entirely to the "tramps."

The cost of new steamers rose greatly during 1912; we should say about 27 per cent in the twelve months, and nearly 50 per cent from the lowest point in 1910. Builders and marine engineers are no doubt now making handsome profits, especially on the contracts they booked during the last eight months, but on the other hand the cost of production has increased enormously.

Practically all descriptions of second hand steamers that could be sent to sea have been in great demand. There has been a rise in the value of the more modern second hand boats of about 30 per cent, and a greater rise in the value of older steamers.

Sailing ships acquired at the low prices ruling in 1910-1911 earned large profits, and the result has been that fewer sales were recorded during 1912, but those vessels which were sold changed hands at prices showing an average increase of 45/50 per cent. The demand has fallen off and, although there is only a moderate amount of sailing ship tonnage offering, prices are easier and are likely to continue so.

The internal combustion engine in its application to seagoing ships made considerable progress during 1912. In our opinion this type of machinery has come to stay, but it has hardly passed the experimental stage yet, and it will be a long time before it will be necessary to consider the desirability of scrapping the existing engines and boilers. A large number of steamers built during the year were fitted to burn liquid fuel, and it is only the price which prevents this fuel being more generally used.

The Fore River Shipbuilding Co., of Quincy, Mass., recently issued their annual report, which shows a reduction of the surplus from \$517,474 in 1912 to \$235,481 in 1913, which Mr. Francis T Bowles, the president of this company attributes to the operation of the federal eight-hour law on naval contracts and to unrest among employees, together with "most serious delays in receipt of important materials by sub-contractors."

CALIFORNIA MARINE INSURANCE BUSINESS IN 1912

The results of marine insurance business in California for the year 1912, as filed with the insurance commissioner of that state would indicate that the companies and agencies had participated in the general prosperity of the country. Total premiums received amounted to \$2,738,743, while the total losses paid amounted to \$785,179, showing a loss ratio as between premium receipts and payments for losses of less than 30 per cent. This includes automobile business.

These figures are somewhat misleading as to the actual results, for many premiums collected in 1912 were on business written in 1911, and many losses incurred in 1912 were not settled by the end of the year. This situation is, of course, somewhat offset by similar conditions in the previous year, that many premiums written in 1911 were not collected until 1912 and show in that year, and many losses incurred in 1911 were actually paid in 1912. However, the year 1912 is somewhat out of the ordinary owing to the loss of the steamer "Workman" at the very end of the year, on the cargo of which most of the companies doing business in California had large lines, and had the returns been made as for losses "incurred" and premiums earned the loss ratio would undoubtedly have been considerably greater.

Some peculiar things are noted in the returns: The Alliance, of London, with a premium income of \$16,825, shows a loss ratio of over 80 per cent, while the British & Foreign, with a premium income of nearly \$109,000, shows a credit to the loss account of nearly \$2,000. Evidently salvages received from losses of past years were in excess of actual amounts paid for losses during the year. The American & Foreign and the Phoenix of London each show a loss ratio of a little more than 1 per cent, while the Home, of New York, reports no losses paid.

As said before, these figures are rather misleading as to actual results, but there is no doubt but that the California business for 1912 was for more profitable than it has been for some years.

PORT OF PORTLAND SHOULD BE COMMENDED FOR EXEMPTING VESSELS FROM PILOTAGE DUES

A resolution was recently adopted by the Commission of the Port of Portland authorizing free pilotage between the sea and Astoria. This resolution was later amended to cover the first two lines who would make Portland a regular port of call in their trans-Pacific service. The Hamburg-American Line and the Royal Mail Steam Packet Line, being the first two companies to announce the establishment of a service which will include Portland as a port of call in their new Pacific Coast services, will therefore be exempted from all pilotage charges and move charges in Portland harbor. It is stated that this will mean a saving to the above named companies of \$400 on each vessel sent to Portland.

It is not known as to what steps will be taken in regard to a similar reduction for other Oriental lines which may make Portland a port of call.

Messrs Green-Tweed & Co., of 109 Duane Street, New York, sole manufacturers of the well known "Palmetto Packing," have just entered their fifty-first year of successful operation, this firm having been established since 1863

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With these facts in view, there should be no inducement for vessel owners to the Teredo worm and coated with barnacles, sea grass, etc.

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ATLANTIC AND PACIFIC STEAMSHIP COMPANY ANNOUNCES SAILINGS

The following circular has been issued by W. R. Grace & Co., agents for the above named firm, whose new service to the Pacific coast has just been inaugurated.

We wish this company every success and admire the spirit that has prompted the building of these ships for service between United States Atlantic and Pacific coast ports. The completion of these four modern freighters will mean a valuable addition to our coasting trade with the opening of the Panama canal, and we welcome their advent:

"The Atlantic & Pacific Steamship Co. have pleasure in announcing the direct sailing of their new 7,500-ton American steamer 'Santa Cruz' for San Francisco and Puget Sound via Magellan, loading at Philadelphia about February 1, 1913, and at New York February 7, making the voyage to San Francisco in about 50 days.

Shipments will be handled through without trans-shipment en route, assuring complete delivery of cargo without damage.

"The 'Santa Cruz' will return via Magellan to the Atlantic coast, sailing from Puget Sound about April 25, from San Francisco about May 5, and will be ready for return cargo from New York about July 1, 1913. This will be followed by the 10,000-ton steamers 'Santa Clara,' 'Santa Catalina' and 'Santa Cecilia," now under construction, sailing from New York approximately August 15, September 15, October 15, respectively.

"These vessels are the latest improved type of cargo carriers, fast and up-to-date in every particular, and will be operated on a fortnightly schedule as soon as the Panama canal is open for commercial trade.

Cargo reservations, through bills of lading, and full information concerning rates and service, will be furnished upon application.

"The S. S. 'Santa Clara' has very attractive first class accommodations, including suites and private baths, for 75 passengers, and will afford a pleasant and interesting trip via Magellan."

SEATTLE IS HEADQUARTERS

On March 3 retiring President Taft signed the order reorganizing the United States customs service and districts throughout the United States, and transferring the headquarters of the district of Puget Sound from Port Townsend to Seattle. This will hereafter be known as the District of Washington.

The Kerr Turbine Company, of Wellsville, N. Y., manufacturers of the Economy steam turbine, have appointed F. A. Mazzur & Co., 141 Milk St., Boston, as their New England representatives.

CHANGES IN DEPARTMENT OF COMMERCE AND LABOR

The act of Congress creating the new Department of Labor changes the name of the former Department of Commerce and Labor to the Department of Commerce and the designation of its head becomes secretary of commerce. The principal effect of the change on what has heretofore been known as the Department of Commerce and Labir is the removal of the Bureau of Labor, the Bureau of Immigration and Naturalization, and the Children's Bureau, with all their officials, employees, possessions, files, etc., to the new department. These bureaus, however, will continue to perform their usual functions until these are modified by act of Congress or by the policy of the head of the Department of Labor.

The work of the bureaus and offices remaining in the Department of Commerce will not be materially changed. There are nine of these—Bureau of Foreign and Domestic Commerce, Bureau of Corporations, Bureau of Lighthouses, Bureau of the Census, Bureau of Fisheries, Bureau of Navigation, Bureau of Standards, Coast and Geodetic Survey, and Steamboat Inspection Service. The Bureau of Foreign and Domestic Commerce, formed last year by the consolidation of the Bureau of Manufactures and the Bureau of Statistics, is charged in general with the duty of fostering, promoting and developing the various manufacturing industries of the United States and their markets at home and abroad by gathering and publishing all available and useful information concerning such industries and markets.

The Bureau of Navigation is charged with the general superintendence of the commercial marine and merchant seamen of the United States except in so far as supervision is lodged with other officers of the government.

BLUE FUNNEL LINE NOT TO CHANGE SCHEDULE FOR PRESENT

Although announcement has been made in the daily press of the establishment by the Blue Funnel Line of a fortnightly service a ross the Pacific, Messrs Dodwell & Co., Ltd., Pacific Coast agents for this firm, report that they are not in a position to confirm this announcement.

For the present, the sailings of the steamers comprising the Blue Funnel Line will continue from Liverpool via the Orient to this Coast every twenty-eight days. The S. S. "Ajax," however, is to be operated in an auxiliary service between Puget Sound and Hongkong.

Arrangements have been completed by the Alaska Bureau of the Seattle Chamber of Commerce for a business men's excursion throughout Alaska, covering 8,000 miles and requiring 40 days. The trip will be conducted under the auspices of the above named bureau and the excursion will start from Seattle on June 22, 1913.

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THE EXCHEQUER COURT OF CANADA IN ADMIRALTY

JUDGMENT IN TWO INTERESTING CASES

It is always an extreme pleasure to read the Admiralty Court decisions of the above court under the able judgeship of the Hon. M. Justice Martin.

On many previous occasions his Honor has entered judgment in important marine cases with admirable preciseness, impartiality and in a highly commendable manner.

This indeed is a vivid proof of his efficiency and fairness in this branch of the law which at all times must be considered as a specialty, and knowledge concerning same can only be gained after a life's study in this branch. Two of his Honor's latest and most interesting decisions follow herewith:

Pallen et al. vs. The "Iroquois," judgment of The Honorable Mr. Justice Martin.

On the 22nd of October, 1911, about 4:30 p. m., off the sandheads, Fraser River, the S. S. "Iroquois" high-powered passenger vessel, Henry C. Carter, Master) heading for Vancouver Narrows on a course N. W. by N. 1/2 N., collided with the steam tug "Noname" (registered tonnage 116, length 86 feet, John Barberie, Master) with load scow in tow, 60x26 feet, bound for Fulford Harbour, via Active Pass, on a course S. E. by S. 34 S. The day was calm, with little if any wind; tide flooding probably under one knot an hour. The "Noname" had clear weather till 3:45, when she ran into a thick fog in which objects were not visible beyond half a cable, but proceeded on her course without abating her speed, which was about the best she could make, viz: six knots through the water. I am satisfied that she regularly gave the proper signals, nor do I find any reason for thinking that the "Iroquois" failed to do the same; the fact that some of the witnesses gave apparently truthful yet conflicting evidence regarding the signals heard in fog can readily be explained by a perusal of the Report of Trinity House Fog-Signal Committee, 1901, reprinted in Smith's Leading Cases on the Collision Regulations (2001) 296. The "Iroquois" was with the slight assistance of the tide, maintaining a speed of probably a little over fourteen knots through the water, which her officers call her "fog speed," as she runs very regularly on that speed and makes distances more accurately on it weren fixed points than on her best speed, which, at 143 revolutions, is about 15½ knots. When the vessels actually came in sight of one another they were not more than 250 or 300 feet apart. It was only immediately before sighting the "Noname" that the engineer of the Iroquois had been given the signal for half speed, which signal, he says, was followed up without any interval by one for "full speed astern," which was responded to, but it was too late to avoid the collision, though the force of the impact was greatly diminished.

It is proved by the evidence of the master and mate of the "Noname" that though they heard a vessel approaching them almost, if not quite, right ahead through the fog for five or six minutes before they sighted her, they took no other precautions than to continue to sound the fog signal. Article 16 provides that:

Every vessel shall, in a fog, mist, falling snow, or heavy rain storms, go at a moderate speed, having careful regard to the existing circumstances and conditions.

"A steam vessel hearing, apparently forward of her beam, the fog-signal of a vessel the position of which is not ascertained, shall, so far as the circumstances of the case admit, stop her engines, and then navigate with caution until danger of collision is over."

No valid reason was given for the failure of the "Noname" to "stop her engine and then navigate with caution;" the suggestion of her master that he did not do so

because the barge astern would sheer and become more difficult to handle is in admissible in the circumstances, because there was nothing in wind, tide or weather conditions to prevent him from at least reducing an speed to what would be the lowest possible speed consisted with safety of tug and tow in the circumstances, even if it were not practicable to let the way run entirely off the tow and come to a stand still. To escape liability it must be shown that the movement was not more than was necessary, but no attempt was made to establish this. Cf. the "Lord Bangor" (1895) P. D., 28; The "Challenge" and "Duc d'Aumale" (1905) P. D., 198 (C. A.). The truth is, according to his own testimony, that he mistook the fog whistle of the "Iroquois" for that of a small boat, and took dangerous chances which contributed to the collision. Indeed the man at the wheel, Williams, testified that they had heard the "Iroquois" for twenty minutes on their port bow, and she had whistled at least four times from that point. On the other hand, I am unable to accept the excuse offered on behalf of the "Iroquois" for running at such a speed which cannot be called moderate in the circumstances. While it may be true that she runs more regularly at a certain speed, that may make it safer for herself in determining her position as aforesaid, but at the same time it, if high, makes her more dangerous to other vessels, which is the fact the regulations require her to guard against. She might, on the one hand, run more regularly at 12 knots than at full speed, or, on the other hand, at full speed than 12 knots, at which full speed she would be safer for herself but still more dangerous to others than she was in this instance.

I am unable to say that, after the vessels came in sight of one another, either of them could reasonably be said to have failed to do anything which would have avoided the collision. They are equally at fault in having brought it about by contravening Article 16, which the Privy Council stated in China Navigation Co vs. Lords Commissioners of the Admiralty (1908) 24 T. L. R. 460, "is a most important article and one which ought to be more carefully adhered to in order to avert the danger in thick * * * It was notorious that it was a matter weather of the greatest difficulty to make out the direction and distance of a whistle heard in a fog, and that it was almost impossible to rely with certainty on being able to determine the precise bearing and dsitance of a fog signal when it was heard." According to the following extract from the judgment of the Admiralty Court in the late case of the "Sargasso" (1912) P. 192 at 199, not only the "Iroquois" but the "Noname" also was guilty of excessive speed:

"With regard to the 'Mary Ada Short,' her speed spoken to by her master was three knots; that is probably a smaller speed than she had a good deal, and in this regard, apart from the angle of the blow, I have come to the conclusion, from the nature of the wound, that the speed at which this vessel was going was a good deal more than he says. If vessels could only see each other at a distance of 100 yards and if they had to be under way at all, they ought to proceed as slowly as they possibly can. It is impossible to say what the speed ought to be in figures in every case, but it is obvious, if a vessel is proceeding at a speed which would not allow her to pull up in something like her own length, in the circumstances of this particular afternoon, and if a vessel could proceed and have steerage way at a smaller speed than she was going, she ought to have gone at that speed, and in so far as that speed was exceeded it was excessive."

"EACH DELINQUENT VESSEL BEARS HER OWN COSTS"

The situation finally herein was like that described in a case in this court, "Wineman" vs. "The Hiawatha" (1902) 7 Ex. 446, wherein it was said, p. 468:

"The rate was so immoderate and the fog so thick that it prevented either vessel, in the brief space of time which elapsed after sighting the other from taking any effective steps to avoid the other."

Pursuant to sec. 918 of the Canada Shipping Act, cap. 113, R. S. C., I direct that "the damages shall be borne equally by the two vessels * * * one-half by each," which means in this case that the "Iroquois" must pay one-half of the damages to the "Noname" because no evidence was given of any camage to the "Iroquois," and there will be the usual reference to the Registrar, assited by Merchants, if necessary, to assess them. I note that the Maritime Conventions Act, 1911, (Imp.) 1 and 2, Geo. V., cap. 57, sec 9, does not apply to Canada, so no question of establishing the Legree of blame can arise in this court, but it has been decided that even where that statute can be given effect to the old rule that each delinquent vessel bears her own costs is still in force. The "Bravo" (1912) 29 T. L. R., 22, and compare the "Rosalia" (1912) P. 109, the first decision under said act (Signed) ARCHER MARTIN. Victoria, B. C.,

28th February, 1913. Justice in Admiralty.
Paterson Timber Co., Ltd., vs. the S. S. "British Col-

Paterson Timber Co., Ltd., vs. the S. S. "British Columbia," judgment of the Honorable Mr. Justice Martin.

This is an action against the cargo of S. S. "British Columbia" (Gustave Foellmer, master); length 170 feet, for having run through and scattered a boom of logs belonging to the plaintiff company while being towed by its steam tug "Erin" (Robert W. McNeill, master) at the northerly entrance to Porlier Pass from the Gulf of Georgia about 1 o'clock a.m. on 15th December, 1911. The weather was clear, occasionally overcast; wind, light southeast; tide on the last of the flood about one-quarter or one-half hour before high water slack, setting out towards the Gulf at about one and a half knots an hour. The boom was of 22 swifters, 1,500 feet in length with a tow line of 240 feet, total length, exclusive of tug, 1,740 feet, and the tug and boom had been in the neighborhood and a little to the east of the red bell buoy at the entrance to the channel since about 11:30 o'clock, holding that position waiting for the strong tide to slacken, the tug being past the buoy, and the boom streching behind, considerably beyond he buoy, on to which the tide sets, both flooding and ebbing. As the tide slackened the tug gradually crep up till at the time of the collision the boom was about half way past the buoy. The towing lights carried by the tug were two bright white lights in a vertical line, ostensibly under Art. 3, and a white light 6 feet high about 40 feet from the end of the boom. This last light was not "a bright white light" within the definition of Art. 2 (a), but merely an ordinary ship's lantern with a range of visibility not deposed to exceed one and one-half miles instead of "at least five" as the article requires a bright white light to have.

A boom of logs is admittedly not a vessel within the meaning of the regulations, and there is unfortunately no article, strictly speaking, which provides for the lights that should be carried when a steam vessel has such a tow, and, apart from the boom light, the proper inference to be drawn from such lights as were here displayed would be that the tug had in tow a vessel or vessels not exceeding 600 feet in length. The nature of the scene of the accident may best be gathered from the following extract from the Admiralty "British Columbia Pilot" 3rd Ed., 1905, p. 130, put in by consent:

"Porlier Pass into Georgia Strait, though short (not exceeding one mile from its southern entrance until fairly in the strait) is narrow, and is rendered still more so by sunken rocks; the tidal streams run from four to nine knots, and overfalls and whirling eddies are always in the northern entrance.

"CAUTION—In consequence of the numerous dangers existing in Porlier Pass, mariners are advised to avoid that passage."

This being admittedly a locality to be avoided it was incumbent upon those who elected to use it to exercise a degree of caution commensurate to the circumstances, and obviously it was a place where it would be difficult to handle a long boom, and only a few booms a year are taken through it, though used constantly by tugs with barges. The master of the "Erin," who on two prior occasions had fouled the bell buoy with a boom, seems to have realized this because on approaching the bell buoy he shortened the scope of his tow line from 120 to 40 fathoms, but even at the reduced length I am satisfied that the tug and tow were still far too long for safety, even 1200 feet would have been unsafe in the circumstances.

When the "British Columbia" opened the pass at its southern end she saw the tug, about one and one-half miles off, apparently heading across the channel behind Race Point on the west side thereof ahead showing the two towing lights (in addition to the customary lights which were duly shown by both vessels), but did not see the boom light, and proceeded at a speed of 71/2 knots (her full speed being 91/2) on the usual course, keeping a little to the westward of the two fixed "leading lights" bearing S. SE., on Galiano Island set up for the purpose of leading a vessel through the northern entrance into the gulf a little to the east of the bell buoy. Keeping a little to the westward of that range course so as to be sure to clear the tug, and after exchanging certain signals, which do not affect the matter, she came up to the "Erin" and passed between her and the bell buoy, in the belief, as the master and first officer testify, that the tug was towing a vessel or vessels not longer than 600 feet, and never expecting to encounter a boom, the light on the end of which they did not observe till after they had passed the Erin, which by this time had advanced a little with the boom so that about half of it was past the bell buoy. They were keeping a proper look out, and when they saw the boom light it showed as beyond and to the westward of the bell buoy, and broad on the port bow, about four points, and was taken to be that of a fishing boat, and as they thought they had passed the tow they proceeded and did not notice the boom till they were almost upon it, the logs not being visible for more than fifty feet or so in the water, and had only time to stop the engines before crashing through it.

The evidence was somewhat conflicting as to the position of the boom, the master of the "Erin" contending that no part of it was within 300 feet of the bell buoy, but his evidence is contradicted by one of his own seamen, William Macdonald, who on cross-examination admitted that the tail of the boom had become twisted in toward the bell buoy, and as this important statement corroborates the evidence of the "British Columbia's" officers I accept their contention that the channel had become blocked by the boom. It was urged that even so, the "British Columbia" was in fault for not having slackened her pace, or stopped, or gone to the westward of the bell buoy, and I was at one time impressed by this submission, and for that reason have given this matter much attention, with the result that having regard to the con-



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dition of affairs that really existed, and that which the "Erin" led the "British Columbia" to believe existed, no blame can be attributed to her. If the boom light had been of such a description and so situated, or if the vertical lights had been of such a description that it or they conveyed a reasonable intimation to the "British Columbia" of the true state of affairs, then I should have found that she had negligently contributed to the collision, but as the matter stands I am forced to the conclusion that she was misled as to the nature and length of the tow, and also that the channel was unknown to her, improperly and dangerously blocked against her. The point is that the officers of the "British Columbia" were never placed in the position of being compelled to consider the taking of any other steps than those they did take on the facts as they were unfortunately made to appear to them. I can only reach the conclusion that this collision was occasioned by the "Erin's" negligence in four particulars, viz: (1) showing misleading light (cf. the "Devonian" (1901 P, 221); (2) too long a tow; (3) insufficient lights on the boom; and (4) losing control of the boom and blocking the channel, as to which this case is stronger against her than that of the "Athabasca" (1890) 45 Fed., 651; wherein that vessel was held justified in breaking through a raft 1,200 feet long, in daylight, in the River Ste Marie. Some apt interesting cases on this question of the duties and responsibilites attendant upon the towing of booms, rafts and low lying craft, are: The "Celicia A. Washburn" (1884), 19 Fed., 722; the "John M. Hay (1892), 52 Fed., 882; the "Gladiator" (1897), 79 Fed., 445; the "Admiral Schley" (1902), 115 Fed., 378; the "Patience" (1908), 167 Fed., 855; N. Y. O. & W. Ry vs. Cornell Steamboat Co. (1911), 193 Fed., 380; and Harb. Commrs. of Montreal vs. the "Universe" (1906), 10 Ex., 352.

As to the light that was carried on this boom, I have decided only that it was insufficient and have said nothing as to the number of lights that should have been carried on it, or on booms or rafts of varying lengths in these waters, because that is not a matter for me to decide, but is one to be brought to the attention of the Federal Government by those interested, and this case shows the importance, and indeed urgency of the matter, not only for the benefit of mariners, shipowners and lumbermen, but for the protection of the travelling public.

Victoria, B. C., (Signed) ARCHER MARTIN, 28th February, 1913. Justice in Admiralty.

WRECKS, CASUALTIES AND MISCELLANEOUS REPORTS

- "MARIPOSA," str., from Seward, Alaska, for Seattle, March 3, lost blade of propeller but proceeded to destination, where she was docked and repaired.
- "FORT BRAGG," stm. schr., when entering San Francisco harbor on March 5, during dense fog, ran into the bktn. "James Tuft," which was lying at anchor, and caused considerable damage.
- "BESSIE DOLLAR," Br. str., when entering Oatau harbor on March 8, struck an uncharted rock. Extent of damage not reported.
- "JIM BUTLER," str., from Tacoma for Seattle, ran ashore on Harbor island, Puget Sound, during a dense fog, but was later floated with assistance.
- "ROMA," str., from Pt. San Luis, struck an unknown object while going into Esquimalt harbor on March 11 and lost three blades of her propeller. She was later docked and repaired.
- "MINNESOTA," str., from Yokohama for Seattle, caught fire at Yokohama in the sulphur cargo and considerable damage to the cargo resulted. It is reported that the steamer herself was not damaged.

- "JASON," Nor. str., while loading cargo at San Francisco March 12 for Mexican ports, caught fire in the lumber cargo in the forward hold, but the fire was extinguished by the use of the ship's pumps. Damage probably not heavy, as the loading of the cargo was completed without discharge and the steamer sailed without much loss
- ROBERT DOLLAR," Br. str., while proceeding over the Columbia river bar on March 13, bound for Yokohama, this steamer struck the bar and carried away part of stern frame and rudder post. The steamer was taken to Seattle, where the cargo will be discharged and repairs
- 'GEORGIAN," str., from Norfolk for San Francisco, where she arrived on March 20, reports heavy weather during the passage and considerable damage about decks and upper works.
- "H. J. CORCORAN," river str., before reported sunk in San Francisco harbor after collision with the str. "Semi-Divers are still working in an effort to locate the safe containing the bullion shipped from Selby's Smelting Works.
- "ALAMEDA," str., "TELEGRAPH," str. On April 25, 1912, the str. "Alameda" collided with the Colman dock and the str. "Telegraph" at Seattle, the "Telegraph" being sunk at the time. In a suit for recovery of the value of the "Telegraph" the court has fixed her value at \$45,000. An appeal will undoubtedly be taken.
- "MIMI," Ger. sp. Contract for the floating of this ship, before reported ashore on North Spit of the Columbia river, has been let and there is every prospect that the attempt will be successful.
- 'MARIE," Fr. sp., from San Francisco September 23 for Hull via Cork, March 5, was driven ashore in the North Sea and became a total loss. The ship was loaded with barley valued at about \$100,000. Insured with the Wheat Tariff Association. Captain and crew saved.
- 'LADY ELIZABETH," Nor. bk., from Vancouver, B. C., December 5, with lumber for Cape Town, is reported as having put into Stanley with four of the crew lost. The ship is not leaking.

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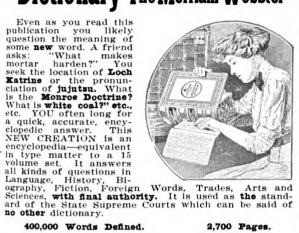
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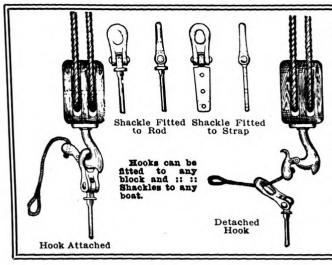
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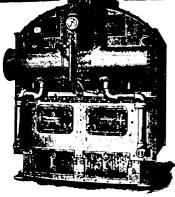
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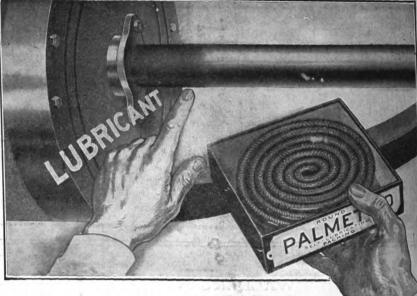
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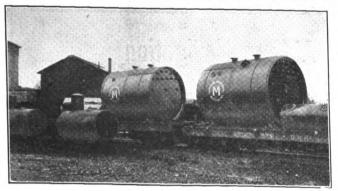


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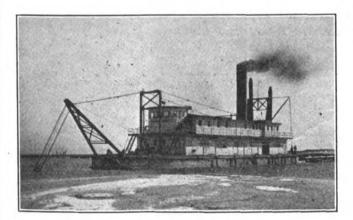
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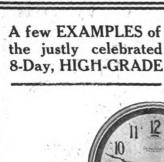
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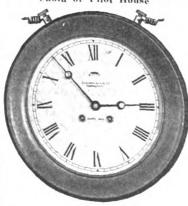
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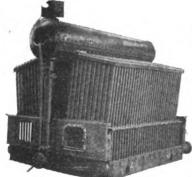
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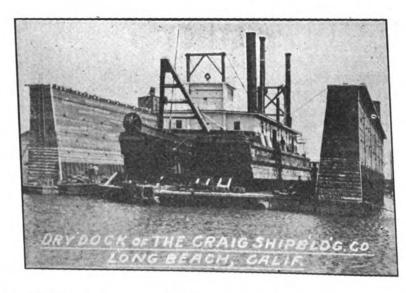
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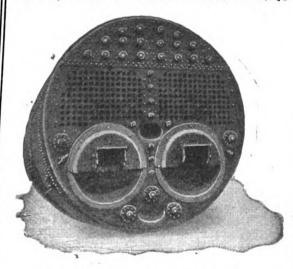
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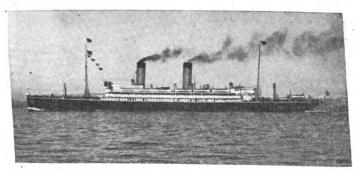
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Pacific Marine Review

VOLUME X.

SAN FRANCISCO, MAY, 1913.

NUMBER 5.

FOREIGN TRADE OF THE PORT OF SAN FRANCISCO

Robert Dollar, Chairman of the Foreign Trade Committee of the San Francisco Chamber of Commerce, is so earnest and fair-minded that his views on the many subjects with which he is familiar are always interesting and valuable. The following remarks were made by Mr. Dollar at a dinner given by the Foreign Trade Department on April 29:

This gathering is different from any ever held in this city, as we have met to discuss foreign trade.

Our Government and Chambers of Commerce send men at great expense to foreign countries to study Foreign trade in its incipiency can best be started by an effort such as this to show our people its benefit and importance to our nation. It is proper to tell you of the great handicaps that the American merchants labor under.

- 1. We have to get foreign ships to carry our trade. I have worked hard and had hoped to see American ships carrying our foreign trade, but I have given that up completely and am satisfied now that I will never live to see it.
 - Our banks do not finance foreign trade business. 2.
 - 3. Our insurance companies do not insure it.

In all those vital adjuncts to commerce we must go to foreign nations, who are our competitors, to make it possible to do business. Our Congress has completely legislated the American ships in the foreign trade off the ocean. Having done this with our own ships, last session a vicious bill was introduced to try to harass and increase the cost of foreign ships engaging in our trade, thereby making us pay higher rates of freight. In banking, over 90 per cent of the drafts are sent through foreign banks, and when we insure our cargoes we have to go to London to do it. Is it any wonder that we are not doing more foreign trade?

When the question is asked: "What is the commerce of San Francisco?" the only way we can answer it so as to be understood throughout the world is to say that last year our imports were \$62,744,188. Our exports were \$54,707,850, and the tonnage entering and clearing was 15,692,990 tons. It would convey no meaning and would be no answer to tell them that the retail trade of Market street amounted to so many dollars. Such statistics are not even available, so that in the eyes of the world, the extent of our intercourse with the outside world is the all-important subject.

This is the excuse that the Chamber of Commerce has to offer for having established a Foreign Trade Department. Having stated the importance, it will be in order to tell you what they have done.

1st. The Chamber has given us a large room, with Mr. C. W. Burks as secretary, and a stenographer.

2nd. We have a library where any information may be obtained of any country or commodity.

3rd. We have been in communication with our consuls in every part of the globe, and we have received hundreds of letters from them. By this means San Francisco has been advertised in a way to reach people who never would have heard of us.

4th. We have used every effort to induce foreign steamship lines to extend their service here.

5th. Through the efforts of the Foreign Trade Department, all foreign steamship companies plying in and out of this port have been induced to adopt a uniform size bill of lading, which means a great saving of time and expense to foreign trade merchants.

6th. We have been endeavoring to secure modifications of tariffs in several countries, thereby making trade possible.

7th. The members of our foreign trade committee have not been idle. Mr. John Rosseter, vice-chairman of the committee and manager for W. R. Grace & Co., has just returned from more than six months' absence in Europe, South and Central America and Mexico, endeavoring to develop trade with those countries, and also to establish a steamship line. Mr. James Otis, of the firm of Otis, McAllister & Co., is now in South America on a similar mission. Mr. Wm. M. Bunker is now in India and for a year will visit many countries and endeavor to increase our commerce. Mr. J. B. Havre has recently returned from an extended trip to South America, thereby increasing our trade with that continent.

Last year I visited Japan, China, the Philippines and Europe, and as a result some trade developed that did not previously exist. Those visits were not junketing trips, but were undertaken for the development of trade and commerce, there being no expense to the Chamber, as each one paid his own expenses.

There is nothing small about the committee when it assigns to me the duty of telling you of the commerce of Japan, China, the Philippines and Malay states. Bear in mind that this takes in more than one quarter of the human race. Primarily our trade with the Japanese was in manufactured goods, but since their late war they have taken a leaf out of our book and adopted a high protective tariff. This became necessary for two reasons:

First, on account of the tremendous war debt, necessitating heavy taxation.

Second, they wanted Japan to become a great manufacturing country. In this they have succeeded.

Now the great bulk of our exports is raw material, but we continue still to buy from them on an increasing scale, so that the balance of trade is very much against us.

Last year San Francisco bought from Japan \$25,884,698 Japan purchased from us...... 18,182,316

Leaving a balance of trade against us of \$7,702,382

Of recent years our exports to them have completely changed from manufactured articles to raw material, but the general trade of Japan with the world has increased by leaps and bounds.

The Japanese have paid particular attention to their merchant marine by assistance in subsidies and otherwise, so that now they are carrying their products to every part of the world. If we had any American ships in the foreign trade they would be formidable



competitors, but seeing we have none and not likely to have any, we are not affected.

China

The formation of a republic like our own, controlled by men educated in this country, having to a very great degree our manners and customs, gives us a prestige and advantage that no others have.

They have all the natural resources which make any nation truly great. As to minerals, German scientists who were sent to investigate say they have more coal than all the rest of the world put together. I cannot give you a better idea of its undeveloped state than to say that they imported from Japan last year one and a half million tons of coal. Enough iron ore is in sight to assure an unlimited supply for centuries.

In agriculture, the richness and productiveness of the soil can best be shown by the fact that the Chinese have produced enough to feed five hundred million of people. Now that a market is opened, and since they have got the means of transportation, they are producing what sells the best, so a great many of the products of the soil which were unknown before will find their way to foreign countries. I have only time to name a few of those.

Soya Beans: The exportation two years ago was so great that fifty-two large tramp steamers were chartered at one time to carry this product to Europe.

Sessimum Seed: A commodity unknown in commerce a few years ago; from Hankow alone they exported 300,000 tons. I may say that the oil from it is the best substitute for our olive oil.

Raw cotton is exported extensively to Japan.

I have mentioned Hankow. It is about the geographical center of China and is nearly seven hundred miles from the ocean, where for eight months of the year our largest cargo steamers can go. seventh of the human race live on this mighty Yangtsze river and its tributaries. Like the Nile, it overflows its banks every year, thereby making the soil very rich. When the purchasing power of the people is increased, as it will be, it goes beyond man's comprehension even to estimate what the enormous commerce of this magnificent valley will be, as the demands of its inhabitants will increase as they get more money, and if we go after it, what our share of that enormous commerce will be is also beyond our highest hopes. We will not have a walkover, however, as Great Britain, Germany and Japan are all fully alive to the possibilities, and their brightest merchants are already on the spot. I ask you merchants to take advantage of this golden opportunity, not by staying at home and writing letters or sending circulars in a language the people can't read, but by sending the very best and brightest men in your employ. This is a man's job. Don't send a boy.

Manufactures are springing up all over the country. The Chinese are going into the production of cotton cloths, and while quantities of the raw material go to Japan, cotton mills are consuming a large quantity. Iron is being produced there and some of it finds its way to this country, so I would urge on you to look into the great and varied opportunities.

As to the stability of the Chinese, when the revolution broke out every native bank closed its doors. But I have yet to hear of any firm which lost a cent. Imagine if a revolution broke out in these Pacific states and every bank closed its doors, what would

be the result and could it be possible to get out of it without a heavy loss?

The Philippines

Recently it was my privilege to go all over the Philippine islands, the object being to see what of their commodities we could introduce here and what we could sell them. I got a very favorable impression of the possibilities of increasing our trade. Much of our manufactures could be sold and we could import much more from them. Ten years ago they bought from us \$10,775,000. Last year they bought from us \$20,600,000, an increase of 100 per cent, and I claim this is only a commencement.

Carlo San Sangara

Parkett Report Reliable

In 1905 we bought from them \$12,658,000. Last year we bought from them \$21,500,000, an increase of nearly 100 per cent.

In discussing the commerce of those islands we cannot separate from it this foolish talk of independence. When Woodrow Wilson was elected President this talk was renewed, and as a result business was paralyzed. The last few months it has been recovering. Any one who has been there some time and studied the situation has arrived at the same conclusion, namely, that they are not ready to govern themselves. Even with the strong guiding hand of our Government, it is no easy matter to keep them straight. The Philippine politicians are the only ones who are clamoring for independence. The real meaning of it is that they want to get their hands in the public treasury. While I am on this subject I might explain the manner of government.

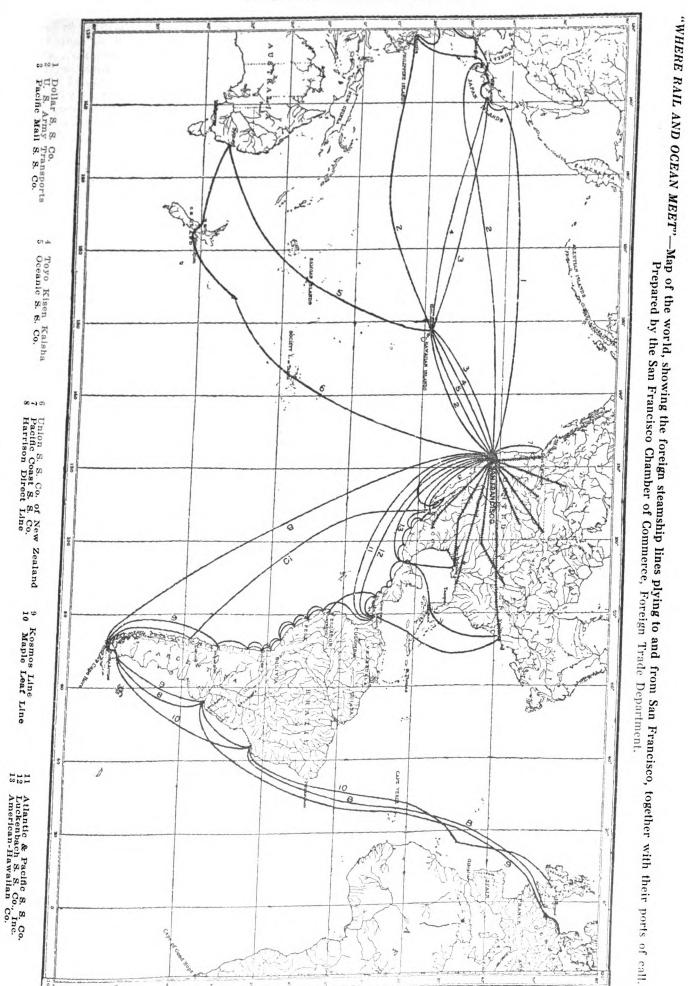
The municipal government is entirely Filipino. The assembly is also entirely Filipino. The commission, or upper house, has eight members, four Filipinos and four Americans, the Governor having the deciding vote. Then they have the protection of the United States army and navy. When the Americans went to the islands there were no roads worthy of the name. Now, on every island, there are good automobile roads, good harbors, wharves, lighthouses and aids to navigation that are second to those of no part of our own country. At great cost we have made it possible for every boy and girl to get an education, teaching them English so that they now can communicate with each other, as in Spanish times the people of one province could not understand the dialect of the neighboring province. They never were so well off before and never would be as well off if we left them to their fate. But I am sure that I voice the sentiment of all true Americans when I say that from that rich possession we should never haul down our flag.

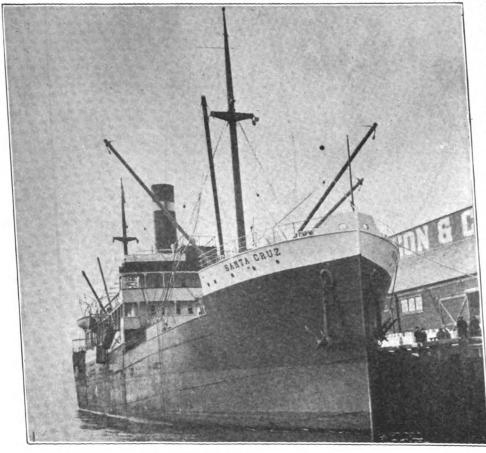
Lieutenant-Commander W. V. Tomb, U. S. N., has been ordered to relieve Lieutenant B. G. Barthalow, U. S. N., as officer in charge of the Branch Hydrographic Office in San Francisco. Lieutenant Barthalow is to be promoted to the grade of Lieutenant-Commander and is due for sea service, having been on shore duty for more than two years. Lieutenant-Commander Tomb's last duty was at the naval station at Olongapo, P. I.

Dear Old Lady (with a view to a little moral teaching)—Now, do either of you little boys say naughty words?

Elder Brother—Well, mum, I ain't much of a 'and at it myself, but young Bill here is a treat. Cuss for the lady, Bill.—Butterfly.







S. "Santa Catalina" in September and S. S. "Santa Cecillia" in October, and thereafter monthly service will be maintained until the opening of the Panama Canal, after which time the steamers will be operated through the canal on a biweekly schedule.

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The steamers are all constructed with a view to carrying Puget Sound lumber to the Atlantic coast and in anticipation of this move W. R. Grace & Co., General Agents of the line, have established a Pacific coast lumber department in their New York office, placing it in charge of Mr. Norman Vincent, formerly of Seattle.

The other three steamers will have a capacity of 10,000 tons. All four vessels are of the highest type, with all the latest improvements and were built in Cramp's Yards at Philadelphia.

S. S. "SANTA CRUZ"

The "Santa Cruz", first of the new American line of steamers to be operated between New York and San Francisco and Puget Sound by the Atlantic & Pacific Steamship Co., arrived at San Francisco on her maiden voyage April 4th, and at Seattle April 15th.

The "Santa Cruz" is of 5,081 tons gross and 3,284 tons net, and has a dead weight carrying capacity of 7,000 tons when on 24 feet draft. The principal dimensions of the new steamer are: Length, overall, 398 feet; depth, 28 feet 6 inches.

The "Santa Cruz" is equiped with the Dahl system of oil burners and carries 446,950 gallons of fuel oil. The steamer's speed is rated at 14 knots, but the officers of the ship stated that much better than this was made on the vessel's initial trip.

A full cargo of freight was carried from New York to San Francisco and Puget Sound, and the voyage to San Francisco was made in the remarkably fast time of 49 days. The "Santa Cruz" also carried a large cargo of freight and a full list of passengers from San Francisco to Seattle, the voyage covering 64 hours.

The steamer sailed from Seattle for San Francisco and New York via Callao, Mollendo, Iquique, Valparaiso and Montevideo on April 22nd, and is to carry freight and passengers between Seattle and San Francisco and the ports named.

The accommodations on the steamer are exceptionally fine, the principal feature being that the state-rooms are arranged for two passengers only.

The "Santa Cruz" is expected to sail again from New York for San Francisco and Puget Sound in July, to be followed by the new steamers of the line at monthly intervals, namely: S. S. "Santa Clara," in August; S.

NEW VESSELS FOR SPAIN

Not alone satisfied with rehabilitating the Spanish Navy by the immediate construction of three 15,000-ton battleships, a number of gun boats, destroyers and other craft, Spain is taking energetic steps to develop a merchant marine. In this instance we have another example of a government encouraging in place of hindering, and fostering rather than burdening its ships.

Messrs. Pinillos-Izquierdo & Co. of Cadiz, in addition to maintaining a coastwise service, have a regular trans-atlantic service between Cadiz, United States, West Indies and South American ports. This company's fleet has recently been augmented by another large modern steamer.

The Compania Transatlantica, of Barcelona, we understand, has improved its service more than any steamship company in that region. Two freight and passenger steamers, of 15,000 tons each, are now being built for this company in England, and when completed will ply between Cadiz and Buenos Aires. These vessels have a speed of 18½ knots and are expected to make the trip from Cadiz to the Rio de la Plata in 13 days. They have a combination of alternating engines and turbines capable of developing 12,000 H. P.

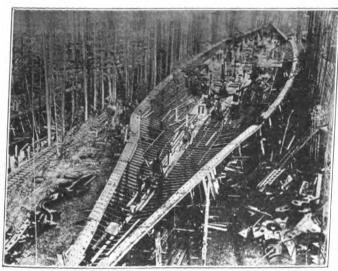
Spain is diligently fostering commerce between Spanish ports and South America and has already found a large and increasing market for her products in the Latin-American countries.

Despite this and the trade policies of other European nations in South America, what has been done by the United States? Nothing. And nothing will be done until Congress sees fit to deal wisely and equitably with our shipowners and our merchant marine.

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THE "AQUITANIA" LATEST ADDITION TO THE CUNARD FLEET

The "Aquitania", the newest and largest of the Cunard Steamship Company's express steamers for the Atlantic service, which was launched Monday, April 21, from the yard of John Brown & Co., Ltd., Clydebank, Scotland, combines, in her design and construction, the experience and invaluable information deduced from the construction and performance of the "Lusitania" and "Mauretania," and the many other



INNER BOTTOM OF S. S. "AQUITANIA"

famous ships that have preceded her under the Cunard flag. Each succeeding vessel built for the company during the seventy-three years of its existence has in one way or another marked an advance on its immediate predecessor.

The new Cunarder is the largest vessel ever floated from a British shipbuilding yard, her principal dimension being as follows:

Length, 901 feet. Breadth, 97 feet.

Depth from keel to boat deck, 92 feet 6 inches.

Gross tonnage, 47,000 tons.

The designed speed is 23 knots and there are accommodations for 3,250 passengers and a crew of 1,000.

In order to lay down the leviathan the whole face of the yard had to be changed. The ground on which the ship was to be built had to be specially prepared and strengthened, piled and cross-piled. Over the cross-piles were placed layers of steel plates, then quantities of cement, it being essential that the ground should not yield an inch at any point.

New crane systems had to be installed for lifting the heavier materials on to the wider, longer slip.

The same berth was used as that upon which the "Lusitania" was built, but owing to the much greater length of the "Aquitania" the preparation of the ground had to be considerably extended.

The area of the sliding ways was about 10,000 square feet, and the pressure about 2.6 tons per square foot.

In addition to the preparations in the yard the river had to be deepened and widened, and the builders' fitting-out basin at Clydebank has also had to be dredged in order to accommodate the liner during completion.

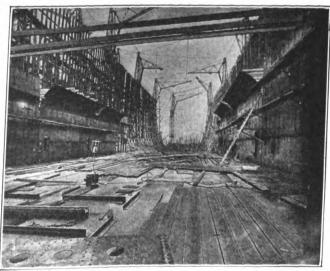
A Ship Within a Ship

An important feature in the "Aquitania", as in the "Lusitania" and "Mauretania", is that extending throughout the most vulnerable parts, there is that great desideratum, a ship within a ship. In other words, there are two shells, the inner as well as the outer shell, both being watertight. The space between the outer and inner skins averages about 15 feet, and at short intervals there are bulkheads dividing this intervening space into relatively small compartments. It will be understood, therefore, that any fracture of the outer shell due to collision will result in the ingress of the sea being limited to a small area at the side of the ship. In addition to this important provision, there are sixteen bulkheads extending athwartship from the port to starboard side.

It might be thought that this combined system of transverse and longitudinal vertical watertight subdivision was in itself sufficient safeguard against flooding, but further provision has been made by the development of the system of fitting watertight decks which was introduced into the construction of the "Lusitania" and "Mauretania".

It will thus be seen that from a point of view of strength the "Aquitania" embodies the main features of the "Lusitania" and "Mauretania", with additions consequent upon increased beam and length. The "Aquitania" will also be fitted with Frahm's Anti-Rolling Tanks, which have proved so successful in the "Laconia".

The passenger accommodation will be provided on



SHOWING LONGITUDINAL BULKHEADS OF S, S. "AQUITANIA"

a scale commensurate with the great size of the ship. The first-class public rooms will include:

Drawing Room
Hall and Galleries
Lounge
Smoking Room
Verandah Cafes

Foyer
Restaurant
Grill Room

On "A" Deck
On "A" Deck

There will also be a gymnasium and swimming bath.

Dining Saloon

The second class public room include:

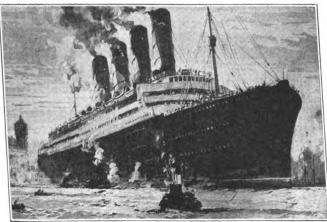
Drawing Room, Lounge, Smoking Room, Dining Saloon.

The public rooms and promenade decks (both open and covered) allotted to third class will all be of the most generous dimensions.

There are altogether eight decks on which passengers are carried.

Plenty of Lifeboats

The division of the ship into watertight compartments is much more extensive than is required by any regulations, and exceptional conditions might therefore have been obtainable in connection with the



S. S. "AQUITANIA"

lifeboats, but the Cunard Company, fifteen months ago, submitted their plans to the Board of Trade for an installation of lifeboats to accommodate every passenger on board. Two motor lifeboats will also be provided.

In addition to the "Aquitania" the Cunard Company has two other new liners—the "Andania" and the "Alaunia"—in course of completion and a third, the "Transylvania", is on the stocks. Of these, the two former, of 13,000 tons, are to run in the Canadian service, and will be in commission this summer. They carry second cabin and third-class passengers only, and have been designed especially for the Canadian trade. There is one notable addition to their accommodation, a gymnasium, which has warranted its inclusion in the design from its popularity on the company's ships in the United States services.

The "Transylvania" is destined for the Mediterranean service, and will be of about 14,000 tons.

AMERICAN SHIPYARDS HAVE MORE WORK THAN EVER BEFORE

Returns received by the Bureau of Navigation of the Department of Commerce indicate that the current fiscal year will show an output of American shipyards greater than for any of the past four years, and equal to the average annual output for any series of active years of construction. For the 9 months ending March 31, the merchant vessels built in the United States and officially numbered by the Department comprised 1,-114 of 260,265 gross tons, compared with 1,051 of 151,341 gross tons for the corresponding nine months a year ago. As the spring and early summer are generally the season of greatest progress, the output for

the year is expected to reach 400,000 tons. Steel steamers built aggregate 151,507 tons, compared with 75,507 tons for the corresponding 9 months a year ago. Shipbuilding on the Great Lakes shows little change, but the total output on the Atlantic seaboard has increased from 64,522 tons to 161,061 tons. Wood sailing vessels show a decrease and form only a small fraction—11,971 tons—of the total for the United States.

S. S. "TACOMA" LAUNCHED

Seattle and Tacoma are both rejoicing over the progress made with the construction of the S. S. "Tacoma," building for service between these ports, and which is rapidly nearing completion at the yards of the Seattle Construction and Drydock Company.

On May 4, the S. S. "Tacoma" was launched from this company's yard before a very large attendance. The vessel was christened by Miss Florence Lister, daughter of Governor Ernest Lister of the State of Washington.

The S. S. "Tacoma," which is the sixth vessel the Seattle Construction and Drydock Company has built for the Inland Navigation Company, is 221 feet in length, beam 30 feet and depth 10 feet. Power is furnished by two Ballin Water-tube boilers and a four-cylinder triple-expansion engine. The Ballin Water-tube boilers have proved very successful indeed and have been installed in many vessels built by the Seattle Construction and Drydock Company.

We understand that the "Tacoma" is about 96 per cent completed and will be ready for service about June 1.

The "Tacoma," which is the largest vessel operated by the Inland Navigation Company, will have accommodations for 1,500 passengers.

NOW READY FOR SERVICE

The new coastwise steamship "San Ramon" the latest addition to the E. J. Dodge Company's fleet, averaged 11.8 knots an hour on her trial trip, held on San Francisco bay April 30. The machinery worked to the owners' entire satisfaction. The vessel was built by Messrs. Kruse & Banks, of North Bend, Ore., and the engines were made by the United Engineering Works of San Francisco.

The "San Ramon", which will engage in the passenger and freight trade between San Francisco, Astoria and Portland with occasional trips to Southern California ports, has a capacity for 1,000,000 feet of lumber and accommodations for 48 passengers. She will be commanded by Captain T. A. Jamiesen, who has been in the employ of the E. J. Dodge Company for some length of time.

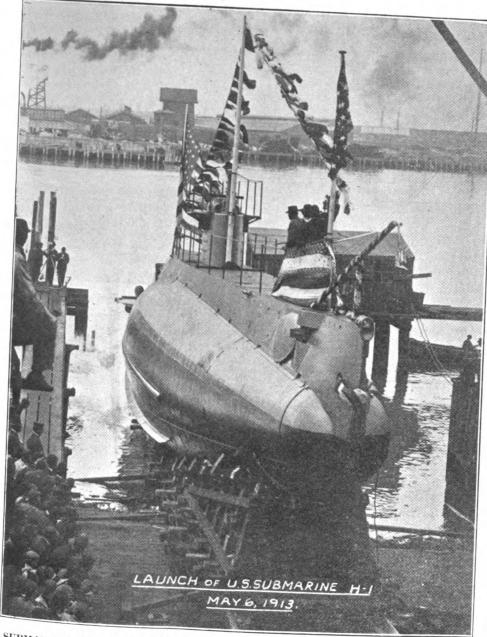
The new steamship is 210 feet long, with 41 feet 6 inches beam and 18 feet 6 inches depth. The cabins, which are located amidships, are fitted with hot and cold running water, electric lights and fans.

The other vessels of this line are the "St. Helens", "Northland," "Rochelle," Phoenix" and "Vanguard."

During the month of March, 1913, the foreign shipments from the port of Tacoma, Wash., reached a total of \$1,935,039, including \$23,907 shipped to British Columbia and \$247,100 shipped to Japan, China, Manila, South America and Europe. Coastwise shipments amounted to \$1,147,459, including \$21,448 to Alaska and \$336,690 to Honolulu and New York.



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SUBMARINE TORPEDO BOAT "H-1" LAUNCHED AT THE YARDS OF THE UNION IRON WORKS CO.

Under the directions of Mr. W. R. Sands, representing the Electric Boat Company, officials of the Union Iron Works Company, Assistant Naval Constructor Alexander H. Van Keuren, representing the Navy Department, and Lieutenant J. W. Lewis, U. S. N., the U. S. Submarine Torpedo Boat "H-1" was successfully launched at the yards of the Union Iron Works Company of San Francisco on May 7.

Invitations to the launching were issued to officials of the Army and Navy, Foreign Consuls on duty in San Francisco, Federal, State and City officials, and many

Miss Leslie Meakins, niece of John A. McGregor, President of the Union Iron Works Company, christened the submarine "H-1."

The principal dimensions of this vessel are:

Length over all	
Breadth	feet
Breadth	feet
5dbmerged500	tons

The propelling machinery consists of heavy oil engines of the Diesel type— 450 H. P. When submerged the vessel will be propelled by motors of 160 H. P.

This is one of the newest type of submarines now being constructed for the Navy Department. A sister ship, "H-2," which is now on the ways at the yards of the Union Iron Works, will be launched in about four weeks. These vessels are to be put through the builders and Government official trials, which are to take place in San Francisco Harbor before final delivery to the Government.

Tests include speed runs on the surface with heavy oil engines (of the Diesel type) at 14 knots, speed runs submerged with the use of storage batteries at 12 knots, diving tests and submerged runs including 24-hour continuous engine run, and a submerged test of 200 feet depth. This latter test is required by the Government to insure the stability of the hull.

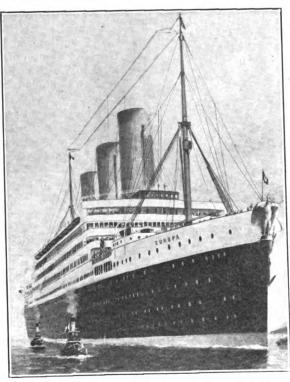
These vessels are equipped with four torpedoes, also carrying four in reserve on the battery deck, and are intended for coast defense work, but they are also equipped for sea duty and with their own power and equipment can make a run of about 2,000 miles in open sea. These submarines

are equipped with a double set of periscopes, which enable the commanding officer to have a clear view from all sides of the vessel while the boat is running under water. The submarine signal apparatus is also installed by which the navigating officer can detect the approach of other vessels while running submerged. The "H-1" is designed to carry a crew of twenty enlisted men and two officers and is fitted with staterooms, living quarters and galley, so that the ship is self-supporting during long runs. Fresh air is supplied from compressed air compartments installed in the vessels.

Depot Quartermaster's Office, 3122 Arcade Building, Seattle, Wash., May 6, 1913. Sealed proposals, in triplicate, will be received here until 11 o'clock a.m., Pacific time, May 26, 1913, for constructing two watertight steel cable tanks, on pile foundation, at Seattle, Wash. Additional information and blanks will be furnished by Major H. J. Gallagher, Depot Quartermaster.

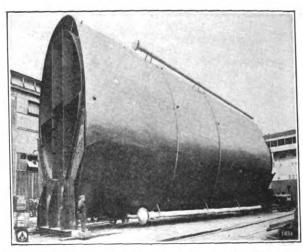
S.S. "VATERLAND" AND S.S. "IMPERATOR" NEW STEAMERS FOR HAMBURG-AMERICAN LINE

The S. S. "Vaterland," of the Hamburg-American Line, the largest steamer in the world, was successfully launched at the yards of Blohm & Voss at Hamburg, April 30th. The new liner was christened by Prince Rupprecht, under the direction of Prince Regent Ludwig of Bavaria, in the presence of a notable gathering. She will enter the regular Transatlantic service in the spring of 1914. The "Vaterland" is the second of three sister ships. The first of these to be launched, the "Imperator," will sail on her maiden voyage May 24th,



S. S. "EUROPA" WHICH HAS BEEN RENAMED S. S. "VATERLAND"

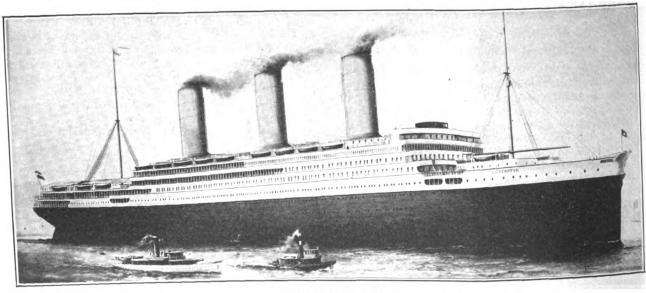
arriving at New York, May 31st. The third ship, to be the largest of the three, is now under construction. In her general construction the "Vaterland" closely



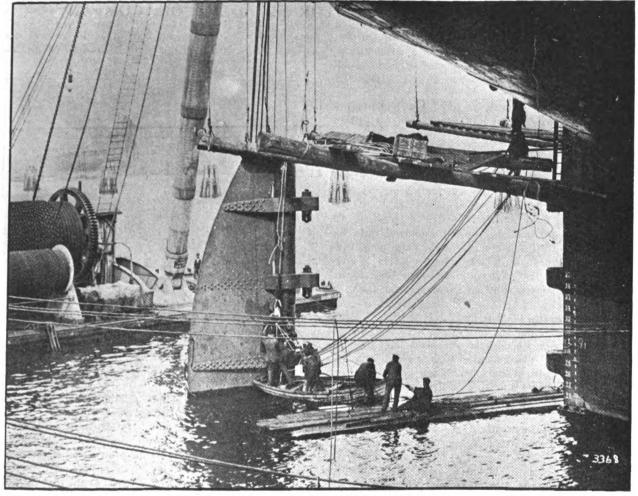
SECTION OF SMOKESTACK OF S. S. "IMPERATOR"

resembles her sister ship, the "Imperator." Both ships have been built with an inner-skin, forming a double hull which is carried high above the water line. These hulls are constructed of heavy steel plates of unusual strength. Some idea of the "Vaterland's" hull may be gained from the fact that more than 1,500,000 rivets weighing two pounds each have been used in her construction. As an additional precaution the steel plates were riveled together and the walls completed before the port-holes were cut by a new process employing the acetylene torch.

The "Vaterland," like the "Imperator," will be equipped with searchlights of over 80,000 candle-power, the largest ever constructed, which will be carried high up on the foremast. These searchlights will be visible for thirty miles at sea, and will enable the lookout to illuminate on object at a distance of seven miles. Both the "Vaterland" and the "Imperator" are supplied with two crows' nests, the upper one being 170 feet above the level of the water, enabling the lookout to discern objects many miles distant. The great liner will be equipped with eighty-four lifeboats which will accommodate all on board. Two of these



S. S. "IMPERATOR"



HANGING MAMMOTH RUDDER OF S. S. "IMPERATOR"

lifeboats will be high-powered motor boats, capable of towing the others. The motor boats are equipped with wireless apparatus, working over a range of 200 miles.

The great size of these vessels has made possible the most complete system of bulkheads and watertight compartments ever installed on any ship. The bulkheads, which are both longitudinal and transverse, are of exceptional strength. The communicating doors throughout the ships are controlled from the bridge. As a further safeguard, these steel compartments have been completely flooded with water to test their efficiency under extreme conditions. In view of the unusual number and strength of these compartments, safety is more completely assured than in ships of smaller dimensions.

The principal dimensions of the "Imperator" and the "Vaterland" are as follows:

S. S. "Imperator": Length, 919 feet; beam, 98 feet; depth, 62 feet; tonnage, 50,000. Average speed, 221/2

S. S. "Vaterland": Length, 950 feet; beam, 100 feet; tonnage, 55,000.

Victoria, B. C., has made wonderful strides during the year closing March 31, records for which have just been compiled. The total of 11,407 vessels, with a registered tonnage of 9,046,115, which berthed at that port during the twelvementh shows an increase of 1,500 ships and 2,000,000 tons over the previous year.

U. S. A. MOTOR-TANK VESSELS

The United States naval authorities have decided to build a motor-tank ship for use in connection with battleships, which, it will be remembered, are now mainly oil driven, the two latest being dependent solely upon oil fuel. The engines for this boat will probably be built at the Brooklyn Navy Yard.

It can easily be understood that the internal-combustion engine is, if anything, more important to the United States than to a European country. The supply of fuel is abundant, and it is necessary for our battleships to have a very wide radius of action if they are to be of any use in naval warfare.

The total number of motor-tank vessels on order for the various governments now number, apparently, sixteen. Of these eight are for the British, five for the Italian, two for the Russian and one for the American. The largest are the two for the Russian government, which are each of 12,000 tons displacement, and are to be fitted with Krupp Diesel engines, the total power in each case being about 4,500 H. P.

The following is a list of new governmental radio stations shown upon the face of the Pilot Charts, published by the Hydrographic Office, United States Navy:

Name of station—		dl l		
Thursday Island				
Auckland, New Zealand	 	N	Z	K
C. St. Thome, Brazil	 	S	P	T
Port Moresby, New Guinea		~	-	•

S.S. "RICHMOND" LAUNCHED FOR STANDARD OIL COMPANY

The Fore River Shipbuilding Company of Quincy, Mass., successfully launched the screw steamer "Richmond" for the Standard Oil Company at noon, April 8th. The vessel was christened by Mrs. H. A. Rahloes, of San Francisco.

The "Richmond" is built on the Isherwood longitudinal framing system and will carry 2,250,000 gallons of oil in bulk. The vessel has straight stem, elliptical stern; poop, forecastle, bridge and bridge houses amidships; three steel masts, with machinery, located aft.

The principal dimensions of the "Richmond" are as follows: Length over all, 435 feet; beam, 54 feet; depth, 31 feet 6 inches.

The vessel is sub-divided into sixteen tanks for oil, with pump-room located forward, and two tanks for oil fuel, located aft, for the use of the main propelling machinery. Forward of the pump-room is a large cargo hold. On the port and starboard sides of the expansion trunks are located eight summer tanks in the 'tween decks.

On the forecastle deck is fitted a Hyde No. 11 steam windlass; after under the poop deck is located a Hyde 10x10-inch steam steering engine with telemotor operated from the navigating bridge. There are also fitted three 9x12-inch horizontal single-geared hoisters, to be used for cargo handling, warping and other purposes.

A continuous fore and aft bridge is fitted from the poop deck to the forecastle deck, and so arranged that all the auxiliary steam and water pipes are fitted under this bridge.

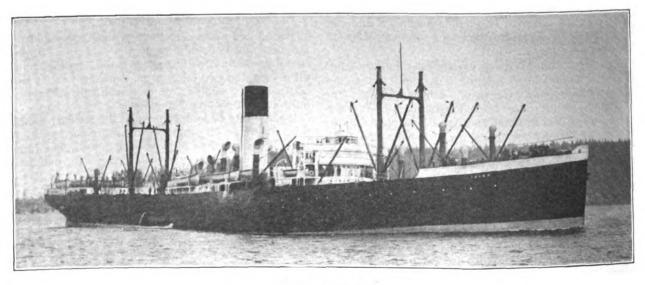
The engine is a direct acting, surface condensing, quadruple expansion marine type of the most modern and improved design. Four cylinders working on

four cranks, cylinders are 23, 32%, 49 and 71 dia., 51-inch stroke, turning up not less than 85 revolutions



LAUNCHING OF S. S. "RICHMOND"

per minute. Engine is balanced on a Yarrow-Schlick Tweedy system. Machinery is designed for a working pressure of 220 pounds per square inch. Three boilers 14 feet 2 inches dia. are installed, arranged to burn fuel oil, the usual circulating pumps, air pumps, feed pumps, bilge pumps, sanitary and water service, deck pumps, etc., are supplied. On a 25-foot draft the vessel will develop 3,000 I. H. P., steaming 11½ knots.



S. S. "IXION"

The Blue Funnel Liner "Ixion" recently arrived at Puget Sound ports on her maiden voyage from Liverpool via ports in the Orient. The "Ixion" brought a cargo consisting of about 15,000 tons and made the voyage from Yokohama to Puget Sound in 13 days and 18 hours.

This latest addition to the Blue Funnel Line's Trans-Pacific Service was launched last November and began her maiden voyage to this Coast January 8. The vessel is built of steel and is of 10,220 tons gross register. She has accommodations for eight first-cabin passengers and 612 steerage. The "Ixion" carries a crew of 112 men. Like the "Talthybius," her interior finish is hardwood and mahogany and the officers' quarters are commodious and attractive. The steamer is 518 feet in length, 62 feet beam and equipped with 5,000-horsepower engines.



DEVELOPMENT OF MAIL STEAMERS DURING ONE HUNDRED YEARS

By JOS. R. OLDHAM, N. A. M. E.

Measuring the progress in steamship dimensions by the proportional advancement in length, it may be seen that in the period from 1838 to 1863, the lengths of steamers were increased by sixty per cent.

Between 1863 and 1888, the length increased thirty-seven per cent. From 1888 to 1913, this increase over the original lengths, amounts to seventy per cent.

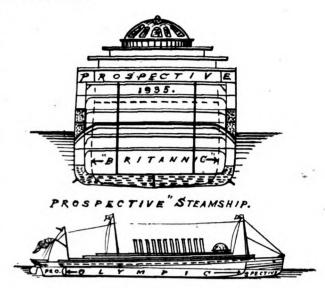
This advancement is herein illustrated by a percentage curve of increase and by outline sections and plans, all of the former drawn to a common scale. The last periodical progression, I am inclined to look upon as more or less artificial, due to abnormal rivalry between the large shipbuilding firms, and also to this form of competition between foreign ship owners, desirous of securing the largest, or most attractive, steamships for the international Trans-Atlantic passenger trade and I am inclined to think that the progress for the next quarter of a century is more likely to be below the advancement between 1863 and 1888, than above it.

If this surmise should prove correct, the great steamship of the year 1938, or just a century after the "Great Western" was completed and the "Great Britain" laid down; will be 1233 feet in length. When we take our stand upon the decks of the greatest steamships of today, we are apt to look upon recent progress as truly prodigious; but when we reduce the centurial increase to annual progression, the advancement seems extremely gradual, as it represents only from three to about six per cent per annum. If this be considered too modest, our progress may be analyzed with larger elements, by computing this on a tonnage basis, or by the cube or the linear dimensions, when it will appear that the progress is ten-fold, or at the rate of twelve per cent of the original displacement per annum, since the building of the "Great Britain". An iron ship, by the way, which had a length of 303 feet and breadth of beam of 51 feet. This most sucessful auxiliary screw steamship had an oak keel, as there were no forges capable of producing an iron keel of sufficient dimensions for so great a hull in the years about A. D. 1838. Moreover, this ship, when last I saw her, had mechanical gearing interposed between her engines and screw propeller, in effect just such as the gearings which are causing so much investigation and experimentations at the present moment, and which is certainly augmenting the efficiency of the marine steam turbine in a marked degree, with this difference, however, in the case of the "Great Britain", the screw shaft was geared up, whereas the steam turbine screw shaft is geared down.

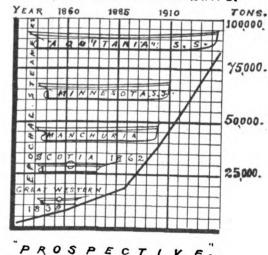
About fifteen years ago I predicted that within a third of a century, a steamship, approximately 1,200 feet in length, 125 feet in breadth and 81 feet in depth, would then be afloat. This vessel will be constructed as a reserve merchant cruiser, she will have a strong protective deck with deep cofferdams and a complete double shell from the keel to the strength deck. The

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topsides externally, will be of mild-nickel steel, while the inner shell will be strongly built on the cellular system, with steel of exceptional ductility to permit of a great degree of buckling, without fracture. The bottom will be sheathed with teak wood, after the manner adopted by the Russian Admiralty, which makes a strong and watertight connection without perforating the bottom plating. This teak sheathing will permit of "coppering" to avoid fouling, which will do away with the necessity of frequent docking,

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and will add greatly to the safety of the ship in the event of grounding. I propose that certain compartments, containing 3,000 tons of water or oil, corresponding to one foot of draft, be kept full during the voyage across the ocean, and in the event of grounding, these compartments could be emptied in less than one quarter of an hour, to enable the vessel to float off of the ground. The total displacement will be about 80,000 tons, and there will be accommodation for 6,700 passengers, with additional accommodation for officers and crew numbering 1,800 persons. The holds will be divided, and subdivided, by 24 transverse and two longitudinal bulkheads, extending from the bottom to the strength deck, without any doors, hatches, or port openings below the load water line; ingress and egress being obtained by means of trunkways, with elevators in every main compartment. The speed will be 30 knots an hour, secured by improved turbine engines of 175,000 shaft horse-power driving five screw propellers actuated by geared shaftings.

The structure will cost approximately \$25,000,000.

Though this ship could not be destroyed by collision with an iceberg or with a rock, ample provision is provided to save all the passengers and crew if it should at any time during the voyage be deemed advisable to leave the ship. There will be 20 large motor

life boats and ninety large rowing life boats, manned by crews of proved efficiency as boatmen and swim-In addition, part of the outfit will consist of large baloons or air ships, capable of carrying a line ashore, or of rendering other assistance. Pumps will be provided, with the motive power located well above the load water line, capable of discharging 20,000 tons of water per hour. Double heavy canvas screens as large as an ordinary mainsail, reinforced by strong steel wire netting and weighted by heavy iron pipes along the lower edge, will be stowed on rollers secured to the bulwarks, opposite each main compartment, in readiness to be lowered to check a severe leak, should the shell be fractured below the water line. With regard to the risk of fire, I may say that with fittings and furnishings made almost entirely of metal and asbestos, the danger from fire will be immeasurably remote, especially as no cargo will be carried, and the enormuos discharge from the emergency pumps will be so arranged as to be instantly applicable to extinguish flame.

With such precautions, the logical conclusion must be that there will be absolutely no danger of violent loss of life through any misadventure to the ship, in the great mail steamer of a less than quarter of a century hence.

THE COMBUSTION OF FUEL

By J. W. WELTON, Chief Engineer, S.S. "Hazel Dollar"

The theory of combustion is very well understood and the heat of combustion can be calculated by mathematical formulas, but to do this requires a knowledge of the elements of chemistry. The practical engineer, however, has a very limited knowledge of the chemical theories of combustion, but he has a real live interest in the results of combustion, and as the writer of this article has given the subject considerable thought, it is believed his statement that the steam boiler offers the largest field for the study of the economy of combustion will be accepted.

The basis of all fuels is carbon, and combustion consists of the uniting of carbon with oxygen in varying proportions. In complete combustion the carbon and the oxygen unite to form CO2, or carbon dioxide. Incomplete combustion results from the union of carbon and oxygen into CO, carbon monoxide, or carbonic oxide.

The complete combustion to CO2 of one ton of carbon gives about 14,650 heat units, while the combustion to CO gives only 4,400 heat units, the former being more than three times the latter.

To attain perfection in burning fuel under boilers it would be necessary to convert all the carbon of the fuel into CO2 and then to transmit all this heat through the metal of the boiler to the water, converting it into steam. This is, of course, impossible of attainment, but furnishes the limit to which we should aspire.

The number of heat units in a ton of coal varies with the various grades from about 12,000 to the figure for carbon, or 14,650 as already stated. As 772-foot pounds are equivalent to one heat unit (the mechanical equivalent of heat), it will be seen that one ton of carbon is equivalent to 11,309,800 foot pounds of work or about 5½ H. P. per hour. Considering coal as 85 per cent carbon we could expect to get as a maximum about 4.7 H. P. per hour. This result differs considerably from the two-thirds of a horsepower which is about what we obtain by the combustion of one ton of coal in most modern arrangements.

The chief causes for loss are: (a) The imperfect combustion of the fuel, the carbon monoxide and soot passing unburned through the boiler passages and into the smoke stack. (b) The faulty and incomplete lagging of the boiler and steam pipes. (c) The latent heat absorbed by the moisture in the fuel in vaporizing it. (d) The heat lost in the ashes drawn from the furnaces—the ash in some coals amounts to as much as 25 per cent. (e) The loss of heat contained in the waste gases (such as nitrogen), which pass up the smoke stack, and the only beneficial effect of which is to help create draft.

With reference to (a) above, the degree of combustion can be determined at any time by taking a sample of the flue gases and analyzing with apparatus which can be obtained for the purpose. An experienced fireman can tell by the flame in the furnace whether the combustion is good or bad.

Lagging of boilers and steam pipes (b) may be done very efficiently and the heat losses reduced to a minimum desired, but generally the boiler is only about two-thirds lagged, and in service the covering is allowed to become broken off and not repaired.

The losses under (c) can be reduced somewhat by keeping the coal dry.

The losses under (d) are unavoidable after the coal has been placed in the bunkers. Of course, any such percentage of ash as referred to above would be sufficient to justify serious complaint to the dealer.

As regards the heat of the gases passing up the smoke stack, this heat can be used to raise the temperature of the feed water or the temperature of the air for forced draft. Both of these systems are in every-day use, the former being represented by the economizer and the latter by Howden's forced draft system.

It is therefore apparent that the loss from incomplete combustion is one that is of great importance and is an item which offers a large reward for the study and practice of economy.



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It requires the oxygen of 12 pounds of air to consume one pound of coal, but the gaseous product of combustion must be diluted to a great extent to allow the air to get to the fuel, and for this reason about a double supply of air is necessary. As 13 cubic feet of air at 60 degrees Fahrenheit weigh one pound, it will require about 700,000 cubic feet of air to affect the combustion of one ton of coal. Should the air supply be different, or injudiciously applied, some of the carbon would be only partly consumed or pass off in the form of CO, in which case a large quantity of fuel is lost.

The question now arises, how is the engineer on watch to know whether he is making the best use of his coal or not? He imagines that the ashes which are thrown overboard are free from unburnt coal or cinders and that he has obtained the full duty out of the coal consumed, and with the means we have at present furnished us of determining the result of combustions, I do not think he is much to blame.

From the above it would appear that engineers want better means of ascertaining: (1) Whether the gases are thoroughly consumed or not before being delivered to the smoke stack; (2) some way of measuring the quantity of air passing into the furnace below the bars, above the bars and into the combustion chamber; (3) some means or instrument for testing or roughly analyzing the waste gases in the stack.

The fact that there is waste is evident from the smoke stacks of steamers, especially when using British Columbia coal or any Japanese coal. No steamers are exempt from this source of extravagance. This black smoke is simply fuel, and although it is so easily detected it is not prevented. Now in the case of incomplete combustion (carbonic oxide), we are unable to detect it, and may be losing a large percentage of our fuel without knowing it.

I have also seen the smoke stack red hot when using a very friable, quick-burning coal such as Japanese coal. I think that in this case, if the air which was passing up through the fire bars and decomposing the fuel could have been reduced and a quantity of air supplied to the combustion chamber or over the bars, the excessive heat might have been prevented and a large saving of coal effected without reducing the amount of steam generated in the boiler.

With deep or heavy fires, when nearly all the air supplied passes up through the bars, the oxygen of the air combines with the carbon of the fuel and forms carbone dioxide (CO2), and the gas passing through the upper part of the red-hot fire takes up or combines with another part of carbon and forms carbonic oxide (CO). If the gas is not supplied with a sufficient quantity of oxygen either in the upper part of the furnace or in the combustion chamber the result is a serious loss, as before shown by the difference in heat given off in the formation of carbonic oxide and carbon dioxide.

In my experience on the S. S. "Hazel Dollar" I have made the air problem a particular study and have managed to prevent the waste of fuel in the form of smoke. I have also reduced the consumption considerably by placing a small number of orifices or perforations at the back of ash pits close up to the line of fire bars, with gauze wire placed over them to send the hot air in the form of spray. Observations were taken from two sight apertures of mica, says 8 inches below those holes, in line with the bottom of the furnace. The flame could be seen streaking down into the bottom of the combustion chamber, the air going

into the hole and making a perfect mixture and complete combustion, and this was the means of reducing the consumption of coal considerably, approximately three tons per day.

The result is hardly conclusive, as I am unable to say whether I am wasting gases which might have imparted so much more heat towards the generation of steam had they been thoroughly oxidized, or admitting too much air and so losing the heat absorbed by the excess in being raised from the temperature of the atmosphere to that of the waste gases of the smoke stack.

As far as I can see this matter will remain a mystery until some one can devise a plan or arrangement by which a practical engineer may be able to account for his coal consumed, and whether he is getting the best possible results for his expenditure.

Again, engineers are often supplied with coal which they are told is equal to Welsh or good Pennsylvania coal, having only the dealer's word for it, its appearance being often deceptive. Should the result of its use come short of owners' expectation, the engineers are blamed for not knowing how to burn it or for wasting it in ashes which have perhaps seemed rather in excess of what they should have been.

SUBMARINES VERSUS DESTROYERS

It is reported by press dispatches from England that in the course of the next twelve months some astonishing details will become known regarding the changes in warship types, but there will be none more noteworthy than the development of the submarine. An entirely new type of submarine with considerable offensive power and capable of crossing the Atlantic ocean at a high rate of speed, is being built for the British navy. These will carry guns, but in addition they will have a broadside of torpedo tubes. Hitherto, underwater craft have mounted only a couple of tubes, or at the most four tubes, but it is understood that the latest vessels will carry four twin tubes, thus being able to fire eight torpedoes.

The displacement of the new ships is at present a matter of secrecy. By some it has been placed at 1500 tons, by others much higher, but there is general agreement that the speed will not be less than 25 knots on the surface, which is the speed of the destroyers of eight years ago. An armor belt and anti-aircraft guns will be other features of the new type and they will of course be driven by internal combustion engines.

While this report is not strictly reliable, and is perhaps based on rumor, there is nothing incredible about it, for at the rate submarines are growing it is quite likely that the type described will be common in a few years.

Submarines as were constructed are too small for the machinery, ordnance and crew required in them and, like all naval vessels, the size is increasing by leaps and bounds.

We have seen the battleships of our own navy increase from about 10,000 tons displacement in the vessels of about fifteen years ago to 32,000 tons in our latest anti-forged, and this is not the end. It would not be surprising to see the battleship increase to almost double this displacement although foreign nations would have to take the lead at the higher figures, as this country is limited by the size of the canal locks.

The cruisers, protected and armored, have been relegated to history in this country. The scout has disap-



peared after a limited program had constructed three. The destroyer has increased in size to about eleven hundred tons and taken the place of the scout. Now it remains only to increase the size and speed of the submarine to take the place of the destroyers, and with their ability to submerge, they would be dangerous opponents to the destroyer.

Submarines as now constructed carry guns, torpedo tubes and wireless telegraphs, and with the myste-

rious features of their construction disappearing, there is every reason to believe that with the development of the internal combustion engine the size and speed will increase at a much greater rate.

Their ability to cross the Atlantic ocean would not be such a marvelous feat when it is remembered that the small submarines built by the Electric Boat Co. several years ago made the return trip to the Bermuda Islands without mishap.

PRACTICAL DUTIES OF SHIPMASTERS

By CAPT. W. HARRY WILKES, R. N. R.

PILOTS

Pilots sometimes study their own convenience in getting away from the vessel. They can advise the master that it would be better to come to an anchor for a time in order to defer their getting away from the vessel until daylight; or should they have reason to think that the sea is rough where their cutter is stationed, they would prefer to wait a little until the sea moderates. Such cases as the above do not frequently occur, but the master should use discrimination and judgment before he consents to delay, and not take the pilot's statements without casting round for the reason that dictates the course he wishes to take. It is well known that at some ports pilots prefer getting away from the ship during daylight; this practice should be carefully guarded against.

At the same time the master should not forget that he is in the pilot's hands, and he should only use discreet pressure.

The master should never take the command out of his pilot's hands under any consideration, except when the man is ill, under the influence of liquor, or when the ship is following a dangerous course and the master can clearly see how to avoid the danger. The master should see that all the pilot's orders are strictly carried out; that the helmsman is good and promptly obeys the pilot's orders; that the officer works the engine-room telegraph in acordance with the pilot's instructions and blows the whistle when ordered to do so; that a lookout is placed; and that the regulation lights are burning brightly. Should the master consider some particular action necessary, such as making a signal, by means of the steam whistle, to an approaching vessel to denote the course he intends to take, he should make the necessary suggestion to the pilot, etc., but not in such a manner as to hamper the pilot in his business of taking the ship to where she is bound.

Surveys Required

Upon arriving at any port before breaking bulk the master should inquire of his agent whether it is customary to hold a survey of the hatches; but should the master anticipate any damage it is his duty to have a surveyor or port warden (where there are wardens) on the spot when the hatches are removed, that he may certify that the hatches were efficiently covered and protected. The surveyor will attend daily for the purpose of making inspection of the stowage of the cargo, dunnage, etc., and when the cargo is all out he will survey the damaged cargo, adjust claims (if any) upon same in the ship's interest, and give the master a certificate upon the hatches, stowage of the cargo, and the dunnage under and round the cargo.

Before taking in cargo it is usual at many ports for the master to call in a surveyor, that he may grant a certificate to the effect that the vessel is clean and ready to receive and carry a dry and perishable cargo to any part of the world.

When loading general cargo in the United States it is usual for a surveyor to be appointed by the ship's agents or charterers, or by the local board of underwriters, as the case may be, whose duty it is to inspect the stowage from time to time and grant the master a certificate when the ship has completed her loading. This certificate is of value, especially when the bills of lading contain the Harter Act clause.

Before taking in frozen produce it is the master's duty to have the holds surveyed, that the surveyor may be able to certify that the holds were clean, and the dunnage battens properly laid and secured. The refrigerating machinery will also be inspected when running, the refrigerating engineer's log-book produced for inspection, and the temperatures of the holds taken.

FIG. I.

The surveyor, when he finds everything correct and the holds properly cooled down, will then grant the master a certificate to the effect that the holds were clean, the dunnage battens properly spaced and secured, the insulation tested and found in good condition, the machinery tested under running conditions and found to be efficient for keeping the temperatures down, and that the vessel is fit to carry frozen produce to any part of the world.

It is necessary to have this certificate before commencing to load, in case of any mishap to the insulation or machinery, or damage to the meat.

Should there be no surveyor at the port, the British consul on application will appoint a shipmaster whose certificate will, coming through the consul, be as efficacious as that of a surveyor, for, where there is



no Lloyd's agent, the consul acts on behalf of British shipping and merchants.

Captains have frequently acted in the capacity of surveyor for Lloyd's, and as it brings in certain fees, while the labors are anything but arduous, it is a source of augmenting a shipmater's income to be sought after.

Computation of Draft

Centre of Gravitys The centre of gravity of a vessel perfectly upright and on an even keel lies immediately below the intersection of a longitudinal line drawn fore and aft in the center of the vessel, and that of an athwartship line crossing the former at right angles in the middle of her length. The center of gravity lies at some point below this intersection, varying in distance from it as the center of weight of the cargo is raised or lowered.

For the purposes of this article it is assumed that the center of gravity lies midway between the waterline and keel.

As the center of gravity moves towards either end of the vessel so also does the inclination of the keel alter in a corresponding degree.

Formula for finding the Change in Drafts To the draft of the vessel apply the number of inches equivalent to the weight loaded or discharged, taken from the displacement scale both the same way, for she has increased or decreased her displacement in accord-

ance with the difference of weight. We have now somewhat cleared the way, and are ready to apply our formula.

Where w=Weight.

D=Distance the centre of weight has been moved plus or minus the distance the centre of gravity has been moved.

" W=Displacement of vessel.

" G=First centre of gravity.

" GI=Second centre of gravity.

Then
$$\frac{w}{W} = \begin{cases} \text{Distance centre of gravity} \\ \text{has moved.} \end{cases}$$

To each of the corrected drafts apply half the distance the center of gravity has moved, the one to be added and the other substracted as the weight has been increased or decreased forward or aft. The result will be the present draft of the vessel.

The distance between the center of weight and the perpendicular drawn through the intersection of the horizontal and transverse sections of the vessel can be ascertained from the builder's plan of the vessel to within a foot. As the ballast-tanks at the ends of the vessel taper off, the center of weight contained in them will have to be determined by judgment. The holds in the ends of the vessel will have to be treated in the same manner.

(To be continued.)

THE BUSINESS AND FINANCÍAL OUTLOOK

The wage increase granted by the Firemen's Arbitration Commission, although adding some \$4,000,000 a year to the payroll of the fifty-four roads concerned in that dispute, has been received with reasonable satisfaction by all sides. It is probable, however, that other classes of railroad labor will now force their demands, with the result that operating expenses will be further increased. Because of these developments there will unquestionably be some movement undertaken by the railroads in the near future to secure higher freight rates in order to offset the steady increase in operating expenses. A great deal more is known concerning the cost of operating the railroads of the United States than was a matter of public record at the time that the joint demand was previously made to the Interstate Commerce Commission for a uniform increase all along the line. The time is apparently near at hand when the whole subject will have to be threshed out again in the effort to view the problem in a broadminded way, with reference to the claims of the railroads, the claims of labor and the claims of shippers.

It is an extremely interesting problem, and one which each day becomes of greater importance, for in a country of such magnificent distances the freight rate will always be an important element in determining the cost of living. The constantly increasing burdens which the railroads are called upon to finance through additional taxation and increased wages, makes it highly important that the Interstate Commerce Commission, or some other competent body, should undertake a thorough investigation in the effort to get at the truth of the matter. The transportation industry is too great an industry in the United States to be seriously unsettled without causing disturbance, and distress in other directions. For that reason it would seem as if the position of the industry must soon be investigated in the effort to see whether or not the railroads are now being properly compensated

for the services that they render the public under conditions of vastly greater operating expenses than were present at the time that the question of a general freight rate advance was last considered by the Interstate Commerce Commission.

There are signs that friends of currency reform will be able before long to agree upon some definite measure for introduction in Congress. Much progress has been made in this direction, and it looks now as if a bill might be formulated in time for action at the special session. There has not been any outline of the proposed bill published as yet, and none will be until the leaders are in agreement concerning the necessary features of such a law. This matter is one of supreme importance at this time, and while it looks as if it would not be possible to pass any law which retained the chief features of the Aldrich bill, there is good reason to believe that some plan may be adopted in the effort to give the people of this country vastly better facilities than they now enjoy. It is of the highest importance that the new system should be fully adequate to meet the demands of the present situation. Of all legislation that affecting the banking system is most difficult to achieve and because of the long period of waiting which the country has passed through, it is of supreme importance that the new law when formulated should present the best wisdom of the men who have been engaged in this most interesting study.

Recent developments in the foreign situation show that the Balkan war episode has not been altogether closed yet, and while the indications are that an amicable adjustment of all differences will soon be arrived at, it must be recognized that conditions abroad will be largely influenced in our money market for some time to come.

THE FOURTH NATIONAL BANK
Of the City of New York,
May 1, 1913.



A YEAR'S SERVICE WITH A MOTOR SHIP

Interview with the Captain and Chief Engineer of the "Selandia"

The "Sclandia" has now completed her third voyage, having traversed a distance of about 63,183 nautical miles. It is a little over a year since the first voyage was commenced, and the ship, which at that time showed promise, has since proved so reliable and satisfactory that it is difficult to find much to say about her.

On April 5, when she was in Millwall Docks, a visit was paid to Captain J. F. Gabe, by kind permission of the East Asiatic Co., the object being not so much to question the 'Selandia's" reliability, of which there was no doubt, as to hear an expression of opinion as to the relative merits of steam and motor ships from the point of view of the commander. In a short time, Mr. K. F. Holm, the "Selandia's" chief engineer, joined the party in the captain's cabin and some very interesting points were discussed. The defects in running shown by the "Selandia" were entirely confined to the first voyage, and their total sum cannot be said to equal what might be expected of a new steamship, while in the subsequent voyages there has been no trouble whatever, and, on the contrary, an exceedingly creditable non-stop run was accomplished between Penang and Port Said, a distance of 4,655 miles. When it is considered that a motor ship can, in the ordinary course of events, travel such a distance without stopping her engines for any purpose, the reliability of the Diesel engine must at once be so apparent as to require no further words. Regarding the slight troubles on the first voyage, these consisted of defects in one of the cylinder liners, which, however, did not delay the vessel; this, and a stoppage of about an hour af Port Said to repair one of the air compressors, in one of whose cylinders a bolt had worked loose, were the most serious accidents.

In order better to follow the usual round of the "Selandia" reference to a map showing the route to the Far East should be made. The ports of call on the outward journey are as follows: From Copenhagen to Aalborg, thence to London, Antwerp, Genoa, Port Said, Colombo, Penang, Singapore and Bangkok. On the return journey of the second voyage, owing to the strike at the London docks, the "Selandia" did not call at that port, and this gave rise to various rumors, questioning her reliability and assuming that serious trouble had developed in the engine room. That all such suspicions were absolutely groundless was proved by the dates of arrival at the various ports in question.

A happy incident occurred on "Selandia's" arrival at Kiel during her second voyage. Contemporaneously with her arrival, the Kiel Regatta was in progress, and the Kaiser was in the act of making a trial trip on the motor liner "Fionia," also built for the East Asiatic Co., when the "Selandia" came into the offing. She naturally received an ovation.

From Mr. Holm it was learned that whereas the original consumption of oil was about 10½ tons per day, each voyage had enabled a slight reduction to be made, and that the present consumption was as low as 9½ tons. Another point in connection with the fuel problem is one which has been mentioned from time to time, namely, the period occupied in filling the tanks with oil. At the very outside three hours only are required to fill the "Selandia's" fuel tanks completely, the quantity being 1,000 tons, whereas with coal a ship carrying 1,000 tons, which would, of

course, be nothing like the equivalent of the equal weight of oil, unless used in suction gas engines, probably a period of about 24 hours would be required, although this varies very largely with different ports, owing to the facilities for rapid coaling available.

The "Selandia" has out-turning propellers, which arrangement gives the most certain steering effects for manouvering before the vessel has gathered way. As we have pointed out in previous articles, the vibration on board the "Selandia" is almost a negligible quantity, but what little there is may be traced to the propellers rather than to the engines. When the revolution speed of each engine is exactly similar to that of the other, there is practically no vibration of any kind, but so soon as one runs either faster or slower than the other, be it ever so little, a slight propeller vibration is set up. Probably one of the reasons why there is generally so little vibration is that four-bladed propellers are used—the usual type adopted in Continental ships.

The work which has to be done by the engine-room staff, although it is by no means of negligible quantity, and must be carried out punctiliously, does not include the heartrending jobs which fall to the lot of steam engineers. There is a considerable amount of hand oiling to be done, which is accomplished in the usual manner by the aid of cans, but in no case is it necessary to feel the working parts to detect any overheating, for such never takes place.

A question as to the ship's behaviour in rough weather evoked enthusiasm from both captain and chief engineer. It was particularly gratifying to learn that the opinion voiced a year ago was confirmed by actual experience, namely, that the "Selandia" is one of the best sea boats in existence. It will be remembered that she is 370 feet in length with 53 feet beam and 30 feet moulded depth, while on 24 feet 11/2 inches draught she carries 7,400 tons deadweight, and on 14 feet draught about 2,750 tons. Bilge keels of about 10 inches in depth are fitted, and the boat is of easy hull form with buoyant ends. Owing to her generous beam she has rather a high meta-centric height, an unusual feature in the design of boats of her class. The vessel's performances should go far to convince shipbuilders of the value of good beam, for the captain tells us that with no further ballast than that afforded by full fuel tanks she is always fit to carry a deck cargo. The draught is moderate, which is necessary in view of the route adopted. Apart from this reason, however, the "Selandia's" proportions would appear to be almost ideal from the point of view of sea-going qualities.

The Red Sea is generally supposed to be a place of great calm; that this is not always so, however, will be appreciated on learning that on one of her trips, the "Selandia," carrying a deck cargo, made wet weather of it. On this occasion the fore-deck was three times flooded by solid water. The ship held on her course and received no damage, although the cargo had to be lashed in place.

In conclusion, an incident is related which is both amusing and significant. On one occasion, when the "Selandia" was in the Red Sea, a steamship possessing a single smoke stack of enormous height and breadth was sighted. Both vessels being fitted with wireless apparatus, a message was flashed from the steamer to the "Selandia" asking if she had any room for "some funnel." Needless to say, the offer was declined.



MOTOR SHIP TRIALS

While it is hardly to be anticipated that any remarkable happenings will occur on the trial trip of a new motor ship, one cannot attend such a trial without a certain amount of interested anticipation which instead of lessening as one sees more motor vessels becomes increased owing to the diversities in construction and arrangement which have been adopted by the various manufacturers. The interest is to a certain extent diminished when one has already seen the engines in the shops, but even so, their actual running at sea is really a vital matter, and the whole arrangement of a motor ship engine-room presents many novel points in contrast with the vessels to which one has been accustomed.

Diesel Engines at First Sight

Perhaps the participants in trial trips are as interesting as the machinery itself. The majority, as a rule, comprise people who have not a very definite knowledge regarding Diesel engines, and some signs of bewilderment are apparent when first they examined the motors. The valves in the cylinder covers, the many levers operated from the various cams on the camshaft, and very frequently the numerous small pumps driven direct off the engine, give it a certain appearance of complication which does not prepossess the visitor in its favor at first sight, especially if he has been accustomed to steam engines. It seems almost impossible to grasp the meaning of the valves, levers and wheels, and indeed, even with a fair knowledge of the construction of Diesel engines, it sometimes takes a considerable time to understand the exact operation of the motor.

When the motor is put into operation and manoeuvers are carried out, the rapidity and ease with which the engines are controlled alter the first impression. Spectators with watches soon cease to use them, for the question as to whether a motor reverses in 8 or in 12 seconds is hardly of great moment, and some have been disappointed at the speed of reversal, owing to its being so rapid that they have been unable to follow out all the movements and their effect. A turn of a handle, a movement of a lever for operating a compressed air motor, and the engine is running in the opposite direction.

Ease of Speed Control

There is one portion of the gear which always seems to interest the onlookers in a special degree, and that is the control of the admission of fuel to the cylinders for altering the speed of the engine, the interest being aroused, perhaps by its similarity to a motor car control. The ability to regulate the speed of very large engines within considerable limits by the smallest motion of a comparatively insignificant throttle lever is certainly one of the most noteworthy features of a large Diesel engine. To see the speed of a 10,000-ton vessel being materially varied by means of a device not much larger than the throttle control on a motorcar has something impressive in its simplicity.

At motor ship trial trips enthusiasts of one particular design are, of course, to be found. Frequently, when the engine on trial is of the two-stroke type, the enthusiast is certain that the four-stroke type is preferable, and vice versa. The idea of super-secrecy which has so long been maintained in connection with Diesel engines seems to have been overcome in a certain measure, and this is a tendency which it is to be hoped will increase considerably in the future. The

progress made in design and construction will be much more rapid as more publicity and freedom of access for examinations are accorded.

One of the difficulties which the development of the motor ship has to contend with is that the construction and running of such a ship is likely to entail a considerable amount of extra labor on the part of the responsible officers of the company, besides necessitating careful reading on a subject and becoming, as it were, beginners in a new field of engineering. As the natural desire of very many men is to avoid entering new spheres if they can help it, one can see that there may be certain unconsidered obstacles which the internal combustion engine has to face in the course of its development.

The Best Diesel Engines

It is sometimes asked which is the best motor yet constructed. This seems a perfectly unanswerable question. Nearly every motor has some specially desirable point, while some of them offer what seem to be particularly undesirable features. It is difficult to say definitely that the two-cycle motor is better than the four-cycle, or, as some would have it, that the four-cycle is preferable to the two-cycle. Within certain limits one of the two is superior, but there are always many special features in each individual case. It is, however, satisfactory to note that in seeing each motor ship as it is put into operation, one has the feeling that no step backward is being made, but rather that progress is to be seen. The experience of the various makers with their boats in service seems instincttively or actually to have been made use of by the other firms, and although it will be many years before any kind of detailed standardization is accomplished in connection with Diesel engines, nevertheless the main points of advantage in each type are now being recognized and made use of in new designs.

It is obvious that no one firm can possess all the best brains in any individual country, and while each firm naturally wishes to gain the full advantage of any innovation or improvement of its own, unless it is patentable it is bound to be copied sooner or later if considered worth while by the other manufacturers.

TAR OIL FOR DIESEL ENGINES

It is interesting to note the extent to which tar oil is being employed for Diesel engines in Germany. A boat, "Benz XVI," in which a Polar-type motor is installed, has lately been running on the Rhine for a considerable period on tar oil, with a comsumption of about .39 lb. of oil per B. H. P., the oil having a calorific value of only 16,000 B. T. U. In this district the oil costs about \$6.00 per ton, which is the cost per ton for California fuel oil having 18,000 B. T. U. Since September, 1912, this boat has been running in service on the Rhine as a tug and utilizing tar oil exclusively.

The first motorship listed to come to the Pacific coast will be ready to leave Antwerp sometime in June. This vessel is owned by the East Asiatic Co., which will have a number of the same type coming regularly to Portland, San Francisco, Victoria and Puget Sound before the end of the year. The first of the fleet is expected to arrive in September, in time to obtain a cargo of new-crop wheat for the return trip to Europe.



ECONOMY OF OIL ENGINES

Working Figures of the Standard Oil Company's Diesel-Engined Tank Vessel

Interesting information concerning the working in actual service of the Standard Oil Company's 1,500 ton d. w. c. tank vessel, which is fitted with a 300 h. p. Nlseco-Diesel engine, was gathered during the tenth voyage made by this boat. The voyage in question was from the Empire Yard, New York, to East Providence, a distance of a little under 170 nautical miles. The following figures are given by the builders of the engine:

Fuel: In tanks on arrival at the Empire Yard, November 22, 1912, 990 gallons; total consumption, 392 gallons; in tanks on arrival at Providence, November 23, 598 gallons.

Time: Total time on voyage, 25 hours, 45 minutes; total running time, 25 hours, 30 minutes; no stoppages

Revolutions: Average per minute, 320; total number of revolutions, 484,000.

Distance: Total distance run by ship, 168 knots. Speed: Average speed per hour by ship, 6.7 knots.

Horse-power: Estimated b. h. p., main engine 300. Consumption: Total consumption, main engine, 392 gallons; average consumption per b. h. p. hour 4 lb.; no consumption in port.

Presures: Air injection storage bottle 1,000 lbs.; first stage compressor, 100 lb.; scavenge pump, 8.5 lb.; forced lubrication, 25 lb.

Temperature: Circulating discharge, 83; lubricating oil, 66.

Auxiliary set: Running for charging air flasks, six hours, pressure in air tanks before charging, none;

pressure in air flasks after charging, 900 lb.

Draught: Leaving port, 12 ft. forward, 14 ft, aft; arriving at unloading port, same draught.

Stores used: Engine oil, 3 gallons; waste, 2 lbs.

It will be noticed that the average fuel consumption per brake horse-power per hour was .4 lb., and that the estimated b. h. p. developed was 300, the engine turning at 320 r. p. m. But on the test-bed trials this engine developed 374 b. h. p. at 300 revolution for 200 hours, so it will be seen that fuel consumption may be lower than the figures given, it being roughly one gallon per horse-power for 25 hours running.

The New London Ship & Engine Co., has established its Pacific Coast branch office at 24 Colman Dock, Seattle, under the management of Arthur Fuller, and contemplates building a plant at Seattle for the construction of both marine and stationary Diesel oil engines.

.... THE

Yang-tsze Insurance Association, Limited

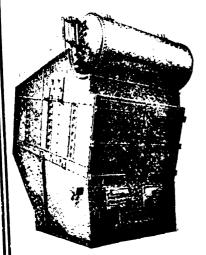
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PORTLAND

SEATTLE

PORT IMPROVEMENTS AT SAN FRANCISCO

Commodious dockage on deep water is the determining characteristic of a great commercial port. Substantial wharves, of sufficient area to permit the free and easy discharge and loading of freight direct into and from railroad cars and teams, with adjacent warehouse facilities, are the requisites necessary to great commerce.

Three factors determine the commercial supremacy of a city by the sea:

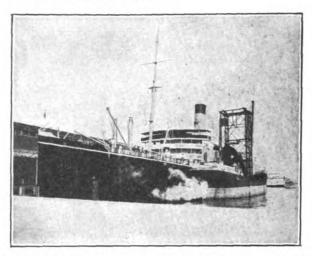
First, its potential tributary commerce; second, the size and accessibility of its harbor; and third, the development of its docks to meet the requirements and accelerate the increase of its commerce.

Such are the conditions at San Francisco. Its natural harbor is not surpassed by any in the world. There are no physical limitations to its tributary commerce. Its final supremacy will therefore be determined largely by the facilities provided by its administrative forces, and in the case of San Francisco, this means the Board of State Harbor Commissioners.

To supply these facilities and to rehabilitate the docks that have been in use for the past thirty years, and if necessary replace them with permanent docks, has been the aim of the present board.

To this end, the following piers have been contracted for, and are now in course of construction:

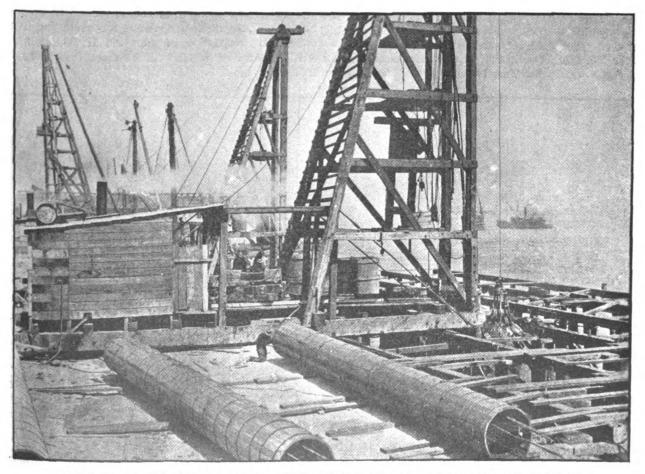
Pier No. 17, at the foot of Union street, now complete, is 126 feet wide by 800 feet long. This pier is equiped with a railroad track on the north side, by which means ships can load direct into cars. The pier is constructed on wooden piles protected by concrete cylinders, steel I-beam caps, protected by con-



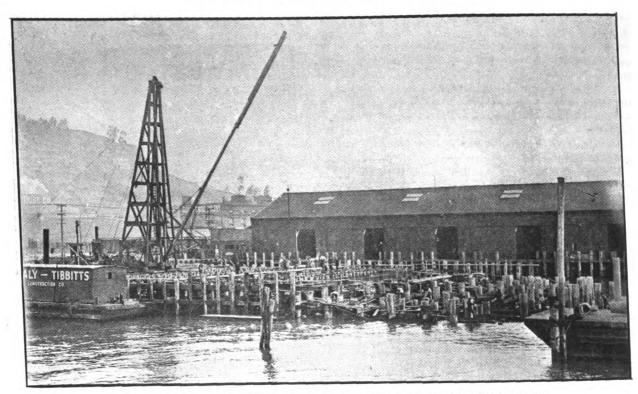
T. K. K. S. S. "CHINYO MARU" COALING AT PIER34, SAN FRANCISCO

crete, and a wooden deck. The shed is also constructed of wood. The contract price of this pier is \$263,400.

Piers 30 and 32, at the foot of Brannan and Bryant streets, now about 50 per cent complete, are being constructed under one contract, and are connected by a wharf 220 feet wide by 200 feet deep. The outside berths on these piers will average 750 feet; the inside berths 550. These two piers are constructed on reinforced concrete cylinders on hard bottom, with concrete beams and deck. The sheds will be constructed of timber with steel outer columns, tracks for electric



PREPARING CYLINDERS FOR REINFORCED CONCRETE PILES AT PIER 28, SAN FRANCISCO



PIER 17-FOOT OF UNION STREET, SAN FRANCISCO, NOW COMPLETED

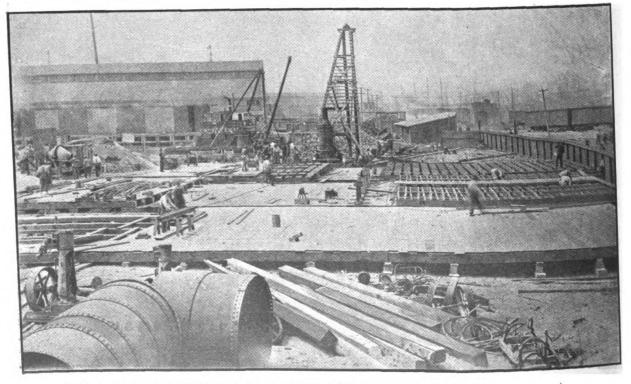
cranes, ship towers and telphers. The contract price for these two docks is \$975,981, which does not include cement, wood block pavement or the steel rolling doors for the sheds.

Pier No. 28, 150 feet wide by 675 feet long, at the foot of Bryant street, is now about 60 per cent complete. This pier is constructed on reinforced concrete cylinders having a reinforced concrete deck and shed. The contract price is \$358,400.

Pier No. 26, between Bryant and Harrison streets, 200 feet wide by 765 feet long, is now about 35 per

cent complete. The construction of this pier is identical with that of Pier No. 30, and the contract price is \$517,650.

Piers 37 and 39, at the northern end of the water-front, have been contracted for at a price of \$483,700 and \$436,400 respectively. These piers will form the nucleus of a system of docks at the north end of the waterfront, consisting of piers 29, 31, 33, 35, 37, 39 and 41, some of which will be more than 1,000 feet in length.



NEW CONSTRUCTION AT PIERS 30 AND 32, SAN FRANCISCO CAL-

There is also contemplated an additional pier at the foot of Berry street, to be known as Pier No. 46. Plans and specifications have been adopted for this pier and bids will be solicited within the very near future.

In addition, contracts have been let for the construction of two sections of seawall to be known as Section 9-A and 9-B, totaling 1,760 feet and costing \$500,000. Abutting this seawall additional docks will be constructed as commerce requires, always keeping safely in advance of the commercial needs of the port.

The Belt Railroad, the two divisions of which have just been connected by a track across the foot of Market street, is a valuable adjunct to the operation of the state wharves. Connecting with this road spur tracks will be placed upon all wharves of permanent character. Upon the wide wharves spur tracks will be run down both sides. This will bring about the much desired effective co-ordination of ship and rail, cheapening cargo handling and reducing its cost to the ultimate consumer.

When these improvements shall be fairly under way the board contemplates additional facilities that will take care of all the commerce that will undoubtedly come this way upon the completion of the Panama canal.

PORTS OF THE PACIFIC

GENERAL H. M. CHITTENDEN, President of the Port of Seattle Commission, has favored the Pacific Marine Review with a copy of Paper 1246, which discusses at length the Ports of the Pacific.

This is indeed a most excellent and able treatise on our Pacific Coast Ports. The authors of this paper have presented their findings under the following headings:

- 1. Strategic Relations of Coast Ports.
- 2. Descriptive Data.
- 3. Engineering Problems.
- 4. Administrative Systems.
- 5. Plans for the Future.
- Influence of the Panama Canal.

The paper treats only of those ports north of the boundary between Mexico and the United States.

General H. M. Chittenden, M. Am. Soc. C. E., deserves the greatest credit as the author of "Ports of the Pacific," but very valuable assistance was received from A. O. Powell, M. Am. Soc. C. E., and Messrs. L. J. Le Conte, E. P. Goodrich and Lewis M. Haupt.

In view of the world-wide interest now being evinced concerning ports on this Coast, the Pacific Marine Review will publish this illustrated discussion in its entirety.

Lack of space in this issue prevents us from publishing a more lengthy extract than the following. In our June number, however, our readers will have an opportunity of enjoying more fully the contents of this most interesting investigation.

Strategic Relations of Coast Ports

Commerce of the Pacific.-Since the days of Magellan, imaginative minds have pictured the Pacific Ocean as the future home of the world's commerce. There is something in the immensity of that ocean, in the present vastness of the population on one shore and the future vastness of that on the other, which conjures up visions of argosies such as the Mediterranean or the Atlantic has never known. The situation as it actually exists, however, makes this picture somewhat of an The very wideness of the intervening sea is a mighty barrier to economic intercourse across it. The breadth of the Pacific as compared with that of the Atlantic, depending on the latitude, is as two or three to one; and, while the cost of transit and loss of time may not be in the same proportion, there is still a wide disparity against the larger ocean. There are also the almost insuperable barriers of race and economic conditions on the Asiatic Coast. We do not admit the Oriental to our shores as we do the European. That immense source of traffic which has sustained its thousands of ships on the Atlantic is cut

off on the Pacific. Likewise those Oriental countries have little to offer the traveler which can compare with the lure of European civilization, ancient and modern. Tourist traffic across the Pacific is a bagatelle compared to that over the Atlantic. Finally, the deep poverty of the hordes who swarm the Asiatic shores, and the backward condition of industry there, are not promotive of vigorous commercial intercourse, for they offer relatively little to sell and less with which to buy.

Thus it results that the commerce of this ocean, great though it be, is small compared with that of the Atlantic, and small to what might be expected from the millions of inhabitants affected by it. Its growth in the near future, strange as it may appear, is more dependent on the countries which border the Atlantic than on those washed by its own waters. As far as the Pacific Coast is concerned, the eyes of its people are turned east rather than west. It is there that their kindred dwell; it is there that the capital exists which shall develop their boundless resources; it is thence that must come those who shall help to populate their shores. It is this fact—that their future is on the Atlantic rather than on the Pacific-which makes the opening of the Panama Canal an event of such tremendous import to them. It is bringing them to their It fronts them toward Europe. It opens to them the treasures of the Occident-far more potent, if less romantic, than those of the Orient. It gives them something of the advantage which the eastern shore of the Continent enjoys by reason of its closer relation to the fundamental sources of our civilization.

If this condition is true of the present, and will remain so, to a degree, for the indefinite future, let it not blind us to the profound changes which are taking place in those ancient, and, but yesterday, nonprogressive, countries which lie on the other side of the Pacific. When we consider what a volume of commerce the accidents of political fortune have turned in this direction from the distant Philippines; when we reflect on the marvelous progress of modern Japan; and when we note the amazing changes now going on in that venerable nation which has slumbered indifferent to the rest of the world for thirty centuries or more, we cannot afford to take a pessimistic view of our future relations with that side of the globe. If ever these people accomplish what is within their practical reach; if ever they turn to account, as is done in Europe and America, their wealth of natural resources and their own capacity for industrial development. surely there will result a mighty increase in trade between them and the rest of the world, and of this the American Continent will enjoy the greater share.



Thus, while the Atlantic holds out to us the brighter present prospect, there is brilliant promise in the Pacific, and in every direction the future is big with hope. Visions of the coming day are profundly stirring the minds of men. Expansion is in the air. The measureless force of unseen psychological influences rushes the world along whether it will or no. Doubtless, it builds exaggerated hopes and paves the way to much disappointment, but its very exuberance of faith is an earnest of vast accomplishment.

This far-reaching movement, which has been crystallized into definite form by the approaching consummation of the greatest engineering work of ages, finds its intensest expression along the Pacific Coast of North America. To other parts of the world, the Panama Canal means simply increased opportunities for trade; to the Pacific Coast it means a new lease of life through the elimination of those barriers which separate it from its true source of sustenance and growth. Everywhere along the Coast, faith in the beneficial results of this great work is unbounded. It is a faith, moreover, which expresses itself in works. From Alaska to Lower California, the Coast is getting ready for the Canal. It is putting its house in order. It is spending in this work prodigious sums of money. The present decade will witness an expenditure in port development of probably \$50,000,000. The slogan which has won this vast sum from the pockets of the taxpayers is: "Get ready for the opening of the Panama Canal," and the formal celebration of that event will find the work well toward completion.

It would be idle to pretend that this prodigious effort springs solely from an actual necessity of providing for the increase of traffic that will result from the opening of the Canal. The popular belief is, of course, that this is the case; but those who have studied the situation closely know better. They realize that the movement is being overdone, but they recognize that it is bound to keep on through the fear which each port entertains of what its sister ports may do. The stigma of possible failure in the race and fear of loss of prestige are the potent forces which are back of these extraordinary efforts. Los Angeles or Seattle would find it difficult on the cold basis of rational business foresight to justify their enormous prospective outlays; but they find ample justification in the necessity of keeping up with a procession which now stalks with tremendous strides from one end of the Coast to the other.

HARBOR IMPROVEMENTS AT VANCOUVER, B. C.

The Department of Public Works, Ottawa, Canada, will build a new wharf at Vancouver, B. C., to be located on lots Nos. 5 to 14 inclusive, Block 1, District Lot 183. Tenders for the construction of this wharf will be invited within the near future.

The dredging of the First Narrows and Parthia Shoal is also being proceeded with by the Pacific Lumber Co., Ltd., of Vancouver, which has been awarded a contract for excavation work in False Creek.

The Department of Public Works hopes to secure the construction of a first class dock under the Subsidy Act for Vancouver. The drydock, it is understood, will be one of the largest on the continent. It will be a thousand feet long and capable of accommodating the largest super-dreadnought.

Sir John Jackson was recently in Toronto but declined to comment, in any way, on the report that he is to have charge of important works on the Pacific

Coast, but it is understood that his visit to Ottawa is in connection with the contracts.

THE NEW ATLANTIC STEAMSHIP ROUTES

Probably one of the issues which may have escaped the notice of the general public, is the great expense incurred by Atlantic Steamship lines in following the new routes. Directly following the "Titanic" disaster, the Atlantic conference of steamship owners laid out a new southern course to Europe, followed by all steamers. This was done to protect the vessels from ice and to regain the confidence of the travelling public, as well as for other reasons.

This course is more than 200 miles longer than the former Southern route and nearly 400 miles longer than the route which was ordinarily taken when there was no grave danger from ice. To follow this new course the steamship lines are incurring a tremendous expense, which will probably exceed \$400,000 for one season alone. In addition to the extra expense for coal and food caused by taking this longer southern route, there is also the expense of extra men, life-boats, additional wireless operators and in some cases, a reconstruction of the vessel by providing an inner skin riveted to the frames, the inside plating being continuous from the double-bottom up to deck F in the case of the S. S. "Olympic", to which reference was made in the February issue of this magazine.

A steamer such as the "Mauretania" burns about 500 tons of coal per 24 hours and in the eight additional hours would burn about 200 tons. The coal costs from \$2 to \$3 per ton which means that for coal alone, the voyage over the new route is at least \$400 to \$500 more expensive. Such a vessel carries 1,500 or 2,000 passengers, and the cost per meal would average at least 40 cents per passenger. This means that the cost for extra meals is from \$1,200 to \$1,600. The iceberg season lasts from April to July and as there are approximately 200 crossings of the Atlantic per month by the important passenger steamships, the total extra cost incurred by following the new route is quite large.

ALASKA STEAMSHIP COMPANY GREATLY IMPROVES SERVICE

By merely adding one steamship to the service and making Skagway a port for call for the ships of the Southwestern route, the Alaska Steamship Co. gives by far one of the finest services ever announced from Scattle. It alternates the sailing of the local Southeastern and through Southwestern steamships, creating a sailing from Scattle every three days for Juneau, Ketchikan and Skagway on express time.

The sailings through to Valdez, Seward and Cordova will be every six days and the sailings for local points between Ketchikan and Skagway will be also every six days.

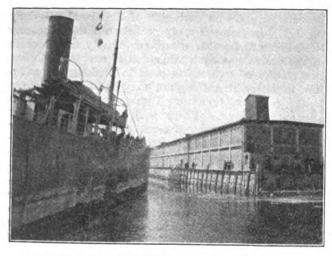
This is a vast improvement over last year's sailings by this company and for sake of comparison, last year's figures are: For Skagway every six days; for Seward and Cordova every eight days. The people of Seattle as well as those living in Alaska are greatly pleased with this improved service.

Cyp. Fabre and Co., owners of the Fabre line from Marseilles, France, in a letter to the Pacific Marine Review deny the report that they will put on a line of steamers from the Mediterranean to San Farncisco when the Panama canal is opened.



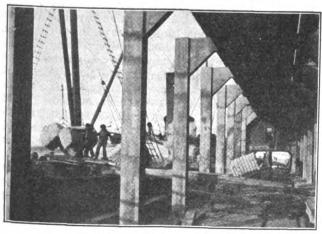
A NEW SERVICE IN THE FOREIGN TRADE

A new foreign service was recently inaugurated between Plymouth, Mass., and Yucatan, which adds materially to the commercial importance of the historic Bay State town. The "Heighington," Captain Ankersen, flying the British flag, entered Plymouth harbor



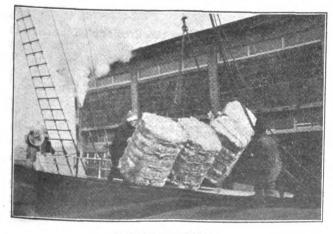
WAREHOUSE OF THE CORDAGE COMPANY

with a cargo of 6030 bales of Sisal fibre for the Plymouth Cordage Co. This is the first foreign steamer that has ever docked at Plymouth. Owned by the Mun-



UNLOADING THE SISAL

son Line of New York, this vessel of 2800 tons left Progreso, Yucatan, at 8 P. M., Feb. 27, and after traversing well-known routes passed the Gurnet March 8,



BALES OF SISAL

and proceeded up the recently dredged channel to North Plymouth. This channel, about three miles long and 18 feet deep at low water, is navigable by vessels carrying fibre which, although bulky, is not of great weight. As a matter of fact the "Heighington" draws only 14 feet. The channel at high tide is 26 feet in depth.

In addition to the dredging of the channel, other preparations have ben made for the coming of the new foreign line, including the building at North Plymouth of a stone pier and fire-proof warehouse for the reception and storage of the fibre.

Although this is the first steamer of the Plymouth and Progreso line to discharge cargoes at North Plymouth the bales were handled with great rapidity. The four cargoe hatches and two sets of discharging booms enabled the Plymouth Cordage Co. to house bales in the new warehouse at the rate of 548 per hour.

OUR SHARE OF PACIFIC OCEAN TRADE

The importance of a body such as the foreign trade department of the San Francisco Chamber of Commerce and the need for its activities are indicated by statistics recently furnished by the Department of Commerce relating to the imports of the seaports fronting upon the Pacific Ocean which now amounts in round numbers to about \$2,000,000,000 annually.

The trade of the United States amounts to only 10 per cent of the whole vast sum, although this country lies relatively near, while 25 per cent comes from the distant United Kingdom, 8 per cent from Germany, 7 per cent from other European countries and the other 50 per cent from the territory adjacent to the importing point.

In order of the magnitude of their imports, the Pacific Ocean countries are as follows:

Australia	326,000,000
China	314,000,000
Japan	255,000,000
Straits Settlements	226,000,000
Hongkong	180,000,000
Dutch East Indies	127,000,000
Chile	127,000,000
Pacific Coast ports of the United States	125,000,000
New Zealand	95,000,000
Philippines	55,000,000
French Indo-China	37,000,000
Siam	27,000,000
Peru	24,000,000
Bolivia	23,000,000
Korea	20,000,000
British Columbia	20,000,000
Central American and Mexican ports	10,000,000
Ecuador	8,000,000
Colombian ports	5,000,000

The markets offered to Americans in the Pacific Ocean countries and the extent to which they are neglected may be gathered from the following figures: Of the imports into the Philippines 37.8 per cent is supplied by the United States; of those into Japan. 15.8 per cent; Australia, 13.5 per cent; Peru, 18.5 per cent; Bolivia, 16.9 per cent; Ecuador, 28.1 per cent; Chile, 12.4 per cent; China, 8.5 per cent; Hongkong, 5.4 per cent; New Zealand, 8.6 per cent; Siam, 2.2 per cent; the Dutch East Indies, 1.7 per cent; French Indo-China, 1.3 per cent; and the Straits Settlements. less than 1 per cent.

The three principal factors needed to properly invade these rich commercial fields are: (1) A knowledge of the needs of the possible customers, (2) tact in dealing with them and (3) a merchant marine to furnish the carriers.

It is gratifying to find that the foreign trade depart-

ment of the San Francisco Chamber of Commerce is applying itself energetically to the first two subjects and pleasing results are already beginning to be manifested.

THE PANAMA CANAL

Lighting the Canal

The general scheme of lighting and buoying the Panama Canal contemplates the use of range lights to establish direction on the longer tangents and of side lights spaced about one mile apart to mark each side of the channel. The range lights are omitted in Culebra Cut, where their use is hardly practicable, and on four of the shorter tangents on the remainder of the Canal. In the Cut there will be placed three beacons at each angle, and between these intermediate

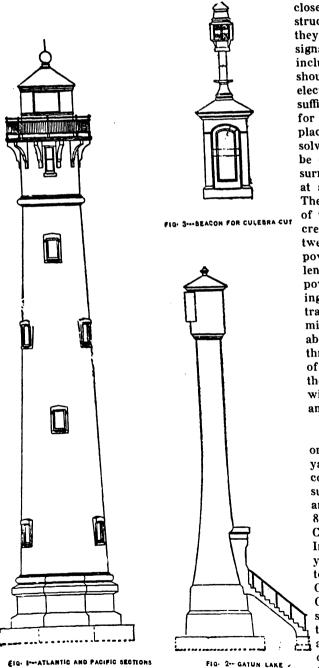
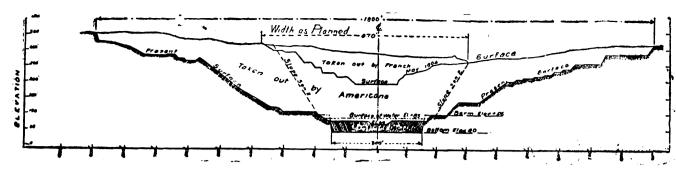


PLATE M-RANGE LIGHT TOWER AND BEACONS

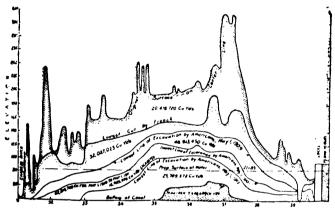
beacons in pairs on each side of the Canal. By keeping his ship pointed midway between these beacons, the pilot will be able to adhere closely to the center of the Canal. At each tangent it is necessary to have two ranges of two lights each to prolong the sailing line in order that the pilot may hold his course up to the point of turning. These range lights will be situated on land. There will be three types constructed, as shown by the cuts herewith, all of reinforced concrete (Plate M). The more elaborte structures will be used on the Gatun locks and dam and in the Atlantic and Pacific Divisions, where they are closer to the sailing lines of the vessels, while simpler structures will be placed in the Gatun Lake, where they are under less close observation. A light and fog signal on the west breakwater in Limon Bay is also included, (Plate P) and a light on the east breakwater, should it be built. The illuminants will be gas and electricity, the latter being used whenever the light is sufficiently accessible. For the floating buoys, and for the towers and beacons which are in inaccessible places, the system using compressed acetylene dissolved in acetone has been adopted. The buoys will be composed of a cylindrical floating body or tank, surmounted by a steel frame which supports the lens at a height of about 15 feet above the water level. The buoys will be moored in position along the edge of the dredged channel by a heavy chain and a concrete sinker, and should remain lighted for six to twelve months without being recharged. The candlepower of the range lights will vary, according to the length of the range, from about 2,500 to 15,000 candlepower. The most powerful lights will be those marking the sea channels at the Atlantic and Pacific entrances, they being visible from about 12 to 18 nautical The beacons and gas-buoy lights will have miles. about 850 candlepower. White lights will be used throughout, and, in order to eliminate the possibility of confusing the lights with one another and with the the lights on shore, all rangelights, beacons and buoys will have individual characteristics formed by flashes and combinations of flashes of light and dark intervals. Excavation

The total excavation, dry and wet, for the Canal as originally planned, was estimated at 103,795,000 cubic yards, in addition to the excavation by the French companies. Changes in the plan of the Canal, made subsequently by order of the President, increased the amount to 174,666,594 cubic yards. Of this amount, 89, 794, 439 cubic yards were to be taken from the Central Division, which includes the Culebra Cut. In July, 1910, a further increase of 7,871,172 cubic yards was made, of which 7,330,525 cubic yards were to allow for slides in Culebra Cut, for silting in the Chagres section, and for lowering the bottom of the Canal from 40 to 39 feet above sea level in the Chagres These additions increased the estimated total excavation to 182,537,766 cubic yards. In 1911, a further increase of 12,785,613 cubic yards was made, of which 5,257,281 cubic yards was for slides in Culebra Cut, and the remainder for additional excavation and silting in the Atlantic and Pacific entrances,



-CROSS SECTION OF CULEBRA CUT SHOWING LARGEST EFFECT OF SLIDES

raising the grand total of estimated excavation to 195,323,379 cubic yards. In 1912 a still further increase of 17,180,621 cubic yards was made, of which 3,545,000 cubic yards was for slides in Culebra Cut and the remainder for dredging excavation at Gatun locks, silting in the Atlantic entrance, and for the Balboa terminals, bringing the grand total of estimated excavation to 212,504,000 cubic yards. The Balboa teminals embrace 7,371,000 cubic yards of wet excavation and 1,432,000 cubic yards of dry excavation for the basin and docks. Deducing these amounts, the total for Canal excavation proper, according to the estimate of 1912, is about 203,710,000 cubic yards, or nearly double the amount of the original estimate made in the minority report of the International Board



PROFILE OF CULEBRA CUT FROM DIKE TO GAMBOA TO PEDRO MIGUEL LOCKS

of Consulting Engineers in 1906. The points of deepest excavation are in Culebra Cut, 495 feet above the bottom of the Canal at Gold Hill, and 364 feet above at Contractor's Hill opposite. The widest part of the Cut is opposite the town of Culebra, where owing to the action of slides on both banks, the top width is about half a mile. Active excavation work on a large scale did not begin until 1907, when 15,765,290 cubic yards were removed. In 1908, over 37,000,000 cubic yards were removed, and in 1909, over 35,000,000 making a total for the two years of over 72,000,000 or a monthly average for those two years of 3,000,000 cubic yards. In 1910, over 31,000,000 cubic yards were removed, the monthly average exceeding 2,600,-000 cubic yards. The total for these three years was over one half of the entire excavation for the Canal. January 1, 1913, there remained to be excavated in the Cut 5,351,419 cubic yards, and in the entire Canal proper 23,426,713 cubic yards.

REGULATIONS FOR CORPORATIONS IN CANAL ZONE

An executive order has been issued by the President of the United States giving the regulations that shall apply to corporations (except insurance companies) intending to do business on the Canal Zone and incorporated under the laws of any State or Territory of the United States or any foreign Government. It is required that the corporation shall file with the collector of revenues a duly authenticated copy of its charter or articles of incorporation and a statement showing the amount of capital stock, location of principal office out side of the Canal Zone, description of assets with their cash value, amount of liabilities, and other information. A certificate must be filed with the collector of revenue certifying that the corporation or company has consented to be sued in the Canal Zone on all causes of action arising against it therein and designating the collector of revenues to be its lawful attorney upon whom all process in any such action may be served, and containing other provisions as to legal matters connected with it. No corporation or joint stock company shall do business in the Canal Zone until such certificate is duly filed and the other provisions of the order are complied with. An annual fee of \$50, payable in advance, is charged.

SHIPPING FEDERATION OF CANADA HOLDS ANNUAL MEETING

The annual meeting of the Shipping Federation of Canada was recently held at Montreal. The following were among the matters discussed by the Federation at this meeting:

The number of seagoing vessels that arrived in the port of Montreal during the season was 415, with a tonnage of 1,790,518 tons, as compared with 398 vessels of 1,714,354, in 1911, an increase of 17 vessels and 76,164 tons. The passenger trade has been exceedingly busy, and large increases on both eastbound and westbound traffic are shown compared with the previous year.

The scheme for a master porterage system was blocked by the harbor commissioners refusing to lease the sheds to the shipping companies, unless they withdrew their scheme, which was done, and the old system still obtains. Before the close of that year the Montreal Board of Trade pointed out the necessity of some system for the quicker and easier handling of freight on the wharves, as complaints had been received about the time wasted in getting delivery. It is thought no improvement can be looked for until the harbor commissioners withdraw their instructions as to the leasing of the sheds, which would then give the shipping companies an opportunity of introducing a system of master porterage, and reduce the cost of handling freight, besides doing away with the congestion.

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IN OUR NEW HOME PORT

As announced in our April number, the shifting of our moorings from the port of Seattle to San Francisco was not in the slightest degree a reflection on the recognized importance of Seattle as one of the leading seaports of the world.

The Pacific Marine Review will continue to impartially discuss all issues pertaining to shipping along the entire Pacific Coast. In order to better accomplish this, the port of San Francisco was chosen for our future headquarters, its location being more central with the opening of the Panama Canal and its commerce larger than any other port on this Coast.

It will be our continued aim and endeavor to present to our readers a complete review of the shipping events of the world and especially those affecting the Pacific Ocean, making such comments and expressing such opinions as the best interests of American shipping seem to demand.

New legislation affecting the American Merchant Marine will be sought and undoubtedly enacted by the Sixty-third Session of Congress. The rehabilitation of our now nearly extinct foreign-going shipping depends on the character of the Bills introduced and passed by Congress. It will be the constant effort of this magazine to urge such legislation as may be beneficial and effective, and to vigorously oppose that which may be injurious or ineffective.

We take this occasion to again thank our friends for their continued co-operation and support, and to assure them that our efforts in their behalf will be even more earnest in the future than in the past.

DEPLORABLE IGNORANCE AGAIN SHOWN BY ONE OF OUR LEGISLATORS

We are fast becoming resigned, so far as concerns the introduction of ridiculous but at the same time most injurious measures in connection with shipping in both the Senate as well as the House of Representatives at our National Capitol.

The Bill now before the House of Representatives, introduced by the Hon. Wm. J. Cary, depicts such a

lack of knowledge regarding the most evident and ordinary facts concerning a vessel's equipment and navigation that we are at a loss to know just where such legislation will finally lead.

Perhaps the most amazing clause in this monstrosity is the one providing that all bulkheads are to be inspected every hour during the voyage. This simply means that the vessels to which this clause applies shall carry no cargo worth mentioning, unless it is Mr. Cary's idea to break out and restow the holds and storerooms of the vessel every hour of the day and night. In this clause alone, there is excellent material for a comic opera librettist.

This astonishing Bill also provides that nothing but cork shall be used for life preservers, notwithstanding that the United States inspectors have proven by actual tests that tule is the better material. Mr. Cary would also have the life preserver a size to float 200 pounds. From this it would appear that the originator of this Bill supposes that the one whose life is to be sustained climbs on top of the life preserver and paddles to safety without getting wet. Our present laws require a floating capacity of 20 pounds in life preservers, for it is not likely that a man's head and hands would amount to more than 20 pounds deadweight. The British laws call for a floating capacity of only 15 pounds. The Cary life preserver would be a raft.

THE EVER-PRESENT PROBLEM

The Rehabilitation of Our Merchant Marine

It was hoped that with the opening of the Panama Canal something would be accomplished to prevent the people of the United States being forced to witness a procession through this waterway of the ships of foreign nations with none in the foreign trade of the United States to intermingle with them. Many suggestions have been made in the columns of the Pacific Marine Review, as well as elsewhere, to encourage capital to invest more freely in American ships in the foreign trade. This country's position today in this respect is being realized and keenly felt by many citizens having no interest whatever in merchant marine affairs.

If our representatives at Washington would only give a little more time and study to this important and weighty problem, requesting the views and testimony of those who know and are as a consequence in a position to suggest what remedy would result beneficially to the general good of all, their service to their country would be more useful and lasting.

As conditions now exist, bills are constantly being introduced with the intention, it would seem, of driving the few ships remaining under our flag to seek protection from other nations, which legislate intelligently where marine affairs are concerned.

Foreign nations, with their lower cost of construction, lower wages of crew, more favorable navigation laws and their respective governments always working in their interests, could scarcely avoid carrying our merchandise and making it impossible for us to compete with them. It isn't their fault that we have no ships. It isn't because they have ships that we have none, but it is merely that the government of the United States does not encourage American citizens in the building and operation of ships, but on the other hand does all possible to prevent it.

The experience of Mr. Bernard N. Baker of Baltimore in his endeavor to finance a steamship company in the United States should assist in a realization by Congress that something was sadly lacking. Millions are involved. While the tariff question is important, this question of a merchant marine is vital.

We know as a fact that our cost of production is much higher than that of any other nation in the world. Our cost of living is also the highest in the This cannot be adjusted in one administration, and no one knows the outcome of it all. protective tariff and the so-called trusts have been named as contributing factors in this.

Such things, however, have nothing to do with our merchant marine. We are now able to build ships in England and elsewhere and register them under our flag. Why has no application for American registry reached the Bureau of Navigation? Simply on account of an owner's preference to operate under a foreign flag. Couldn't we, without any loss to ourselves, shape our laws so that they would compare favorably with those of other nations? Is it not true that foreign nations now have, with their keen sense and foresight and sensible and encouraging laws, finer ships than we, better managed and manned as a whole, and as a result of larger earning capacity? Why shouldn't we carry the crews we wish? It has been shown that only 5 per cent of the sailors now employed in the different steamship services under our flag are Americans. Therefore, what difference if we have the crew Danes or Japanese, Italians or Chinese? Surely, if the steamers owned by foreign nations are safely operated with these crews, who are as much "able seamen" as some of those we employ at three and four times the salary, our ships would be as safely and as successfully operated.

Confer with the shipowner and learn what is lacking and what is needed. Existing conditions can be remedied, and why not introduce bills to this effect, rather than bills with the object of adding more burdens to those already carried by the shipowner of the United States?

Other industries and trades are protected. In fact, our government is still protecting the various products of this country by the tariff. We don't ask a subsidy for our shipping industry, but what we do earnestly ask and advocate is a revision of our navigation laws, not added amendments as at present, preferential duty and free taxation by all states of American ships. Then the Free Ship Law would be of some avail. Then the American sailor would have no further fear of the competition of Chinese and Japanese crews; for he, with his better advantages, could be given a superior position and need not necessarily receive the same wages paid the Japanese and Chinese or other foreigners. When we have American ships, then the matter of training American youths for the sea can be gone into, training ships can be provided for some purpose and will be of some avail.

In our March issue, Mr. F. S. Samuels, one of the executives of the Oceanic Steamship Company of San Francisco, offered a suggestion to assist in the creation of an American merchant marine. While many of our important shipping men have somewhat different views, so also have our legislators, but a combined effort on their parts, with the same purpose in view, would alleviate the present unsatisfactory burdens on shipping.

Captain Robert Dollar, who needs no introduction to our readers, makes the following comments on Mr. Samuel's suggestion of charging our coastwise vessels full Panama Canal tolls and using the amount to develop our merchant marine in the foreign trade. Capt. Dollar says:

"There cannot be much objection to it, but it will not accomplish the results intended.

"First, I claim that the shipowners engaged in the coastwise trade are not pecuniarly interested in whether they pay tolls or not, for if they have to pay tolls, they will charge the American public that much more for their freight, so it is the public and not the shipowners who are interested.

Second, the expending of the amount so collected on American vessels under the Ocean Mail Act of March 3, 1891, would certainly assist this class of vessels and we would have more of them, but this will never give us a merchant marine worthy of the name. It is the cargo steamers that give a nation a merchant marine. Great Britain has more steamers than the rest of the world, but only a little over 10 per cent of them are mail steamers, so Mr. Samuel's proposal would assist only 10 per cent. By doing this, it is very difficult to figure out how this will give us a merchant marine. The great trade of England has been produced by her cargo, or what is commonly called 'tramp' steamers which go into every port of the world. England's greatness is directly the result of the commerce that those vessels brought to her. Mail steamers are good and essential in their place, but cargo steamers are the burden bearers of commerce.

"It is very good for a farmer to have an automobile, but the four-horse wagon is of far greater importance. Without it he could not market his crops, and without it the automobile could not be kept up. So with mail steamers. They are very good and important, but the tramp steamers will build up the commerce of the country as no other means can.

"Many plans have been suggested, but we must come back to the following:

"For mail steamers pay the same compensation for carrying the mail that other nations pay, plus the extra cost of operating the vessels under American regu-

"For cargo boats in the foreign trade permit us to buy them where we can get them cheapest, and change our navigation laws and inspection regulations so that we can operate them as cheaply and under the same favorable conditions as our competitors. Nothing more is required.

"Stop our legislators from making fool laws which make the operation of American vessels almost impossible. The shipowners of this country will do the rest."

AN ABSURD CUSTOMS LAW

Captain Thomas W. Garlick, of the Great Northern Steamship Company's S. S. "Minnesota," is the latest victim of the ridiculous rule imposed by the Federal Government holding the master of a vessel responsible for the smuggling of opium into this country by a passenger or member of the crew. Captain Garlick was fined \$928 by the customs authorities at Seattle because 168 tins of opium were unlawfully brought in by either a passenger or member of the crew on the S. S. "Minnesota."

The absurdity of the law under which this fine was imposed is quite in line with that of other legislation regarding our shipping-or what there is left of it.



The master of a large steamer has something to do aside from making a personal inspection of every nook and cranny of his ship or searching every man, woman and child who comes aboard or goes ashore. The navigation and handling of a vessel in addition to the other duties of a master amply occupy his mind, and from sheer lack of time on his part to give personal attention to everything, many of these duties have to be delegated to others. Even with the strictest lookout, the greatest vigilance and the utmost conscientiousness, articles, especially small ones like tins of opium, are often concealed with great cunning in curious places on board ship.

The injustice of this rule in fining a master when opium is smuggled wholly without his knowledge or even suspicion, after reasonable care that it shall not be, is manifest to anyone at all acquainted with conditions on board ship.

If the Government is so anxious to keep opium out of this country, why does it not detail a customs inspector to every incoming vessel, with no other duty than to watch for opium smuggling? Or why does our Government not pay the wages and board of an additional ship's officer, who shall be on watch for opium smuggling, instead of making the busy master responsible? What right has the Government to make customs inspectors out of ship's officers paid by the shipowners?

"STARBOARD" OR "RIGHT"?

The funny writers of the daily press are commenting with much glee and more or less humor over the recent ruling of the Navy Department condemning the use of the time-honored terms "starboard" and "port," and insisting on the use of "right" and "left" instead. While there is always danger, at first, in departing from old customs, it is probable that the substitution in this case will eventually result in greater safety at The "old salt" is, of course, thoroughly familiar with the terms as now used and the change may result in some confusion at first, but as every new man at sea is obliged to learn to steer and the real meaning of the orders given, may he not become proficient much more quickly by the use of terms familiar from childhood than by being obliged to learn new terms, and their meaning, which really have lost their original significance?

In the old days when ships were steered by the use of a tiller acting on the rudder the words "starboard" and "port" applied really to the direction in which the tiller was put. The starboard side of a ship is the right-hand side looking forward, the port side the left. To go to starboard is to go to the right, to The direction of the rudder, being on port to left. the opposite side of the pivot from the tiller, would naturally be opposite to the direction of the tiller. With the tiller swung to starboard the rudder would swing to port, and the ship would also swing to port, or to the left, the effect being, as it is now put, to "bring the starboard side up." With two ships meeting nearly head on, to pass "port to port," as the rules of the road require, the natural order to the helmsman would be "port," or "port a little," or "hard-aas the situation demanded. The natural result would be that the helmsman would swing the tiller to port or to the left, the ship would swing to the right, or starboard, but the ships would pass "port to port," or "left to left," and the "port side would be up."

Later, when the tiller and wheel ropes were dispensed with and the stationary steering gear was adopted, the same result obtained. With the order given to "starboard" the helmsman naturally turned the wheel to his right hand or starboard, and the ship swung to port. Later still, it apparently became desirable that the ship should swing the same way in which the wheel was put; in other words, with the wheel turned to the right the ship was swung to the right. This was accomplished by the use of the diamond screw and other patented steering devices, and it was supposed that all errors of helmsman would be obviated. Seeing which way the ship should swing, and knowing that the swing would be in the same direction as that in which he turned the wheel, the whole thing was supposed to be very simple. But this necessitated a change either in the way the orders were given or in which they were executed. Take the illustration of two ships meeting nearly head on, obviously to give the order to "port," and the helmsman to turn the wheel to the left would cause disaster, for the ship would then swing to the right and into the approaching vessel. But evidently it was necessary to keep in mind the one predominating idea that in passing "port to port" the port side must be "up," and in order to accomplish that end the steering direction given must be to "port." It then remained for the helmsman to remember that he must bring the port side of the ship "up," and in order to do that he must not follow what should be the obvious meaning of the order "to port" and turn the wheel to the left, but must turn it to the right, or starboard, and many disasters have resulted from this apparent conflict of

If the proposed order of the Navy Department is carried into effect it would seem as if the whole matter would be simplified. The navigating officer, in order to pass an approaching ship on his left hand, knows that he must swing his ship to the right. Or if he desires to keep farther away from a shore on his starboard side he must keep to the left, consequently the order is given "left," the helmsman has nothing to think about but that he must turn the wheel to the left and the ship obeys by swinging to the left and to safety. The question as to which way to turn the wheel in order to bring one or the other side of the ship "up" is no longer paramount.

"STRATHTAY" VERSUS "YOSEMITE"

On April 18, 1910, the steamer "Strathtay," bound from San Francisco to Guaymas, was in collision with the steamer "Yosemite," bound from San Pedro to Portland via San Francisco, and damage was suffered by both steamers. On return of the "Strathtay" to San Francisco libels were filed by each steamer against the other for damages sustained, that to the "Strathtay" being estimated at about \$4,500, while that to the "Yosemite" was estimated at about \$1,200. Early this month the court handed down its decision that the "Strathtay" was alone to blame.

The case will undoubtedly be appealed.

A small boy handed in the following on an examination paper in United States history: "General Braddock was killed in the Revolutionary War. He had three horses shot under him and a fourth went through his clothes."—Everybody's.



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THE ROYAL MAIL STEAM PACKET EXTENDS TO THE PACIFIC COAST

For several weeks past Mr. E. J. M. Nash, the Special Representative of The Royal Mail Steam Packet Company in the United States, and Mr. A. M. Gillespie, Vice-President of the Frank Waterhouse Company, have been visiting Seattle, Tacoma, Portland, Vancouver and Victoria, looking over the general situation as regards dock and other facilities, preparatory to the inauguration of various services that The Royal Mail Company has under consideration.

A commencement has been made into the Oriental Trans-Pacific trade through the extension of the European and Oriental service of the Glen and Shire line owned by The Royal Mail. The present steamers running in this service will be replaced by eight new vessels now in the course of construction. They will be of about 14,000 tons carrying capacity, have large passenger accommodation and a speed of 14 knots. From information received, it appears that the future plans of this company in connection with the Pacific Coast have already been decided on and such changes as are necessary will be acted on without delay.

The Royal Mail and its associated lines, the Pacific Steam Navigation Company, the Lamport & Holt Line and the Nelson Line, at the present time, and for many years past, have been operating passenger and freight services covering the entire North and South American continents with the exception of between Panama, San Francisco and Vancouver.

The Pacific Steam Navigation Company, about ten years ago, ran a high-class passenger and freight service between San Francisco and Panama, but for some reason, after running for two years, this service was withdrawn.

Owing to the developments between this Coast and the South, it seems quite possible that sooner or later The Royal Mail will again put this service in operation. Should this be done, owing to the connection given by the various lines of The Royal Mail radiating from Panama and Colon, this service would afford great convenience to shippers and stimulate the passenger traffic.

It was reported last August that The Royal Mail Company placed an order in Belfast, Ireland, for the construction of four steamers of about 20,000 tons gross register to run between Great Britain and Northern European ports and the North Pacific Coast via the Panama Canal. These vessels will make the trip between Europe and points in California, Oregon, Washington and British Columbia in from three to four weeks. This fast service will probably be supplemented by intermediate steamers of moderate speeds. These facts clearly show that The Royal Mail Company has confidence in the great development of the Pacific Coast.

It is gratifying to note that the well-known transportation firm of Frank Waterhouse & Company, with head offices in the Central Building. Scattle, have been appointed agents of The Royal Mail Steam Packet Company for Scattle, Tacoma, Portland and Vancouver.

The Royal Mail Steam Packet Company is the largest steamship company in the world, the tonnage of its fleet of 365 ocean liners reaching the gigantic total of 1,541,854 registered tons, this company's next competitor having 1,200,000 tons, and with the immense fleet of new vessels now under construction, the tonnage of The Royal Mail should, in the near future, pass the 2,000,000-mark.

The company was incorporated by Royal Charter in England in 1839, inaugurating services to the West Indies and Central America in that year, and its operations now encircle the globe.

It is interesting to note that the first steamships calling at Colon on the Atlantic side of the Isthmus, and Panama on the Pacific side, were vessels of The Royal Mail Steam Packet Company and the Pacific Steam Navigation Company, in 1840.

From the announcements made by these lines, it is apparent that they will have more vessels passing through the Panama Canal than any other company.

Definite arrangements have been made for a fortnightly service of passenger and cargo liners of about 15,000 tons gross register from Liverpool to Spain, Cuba and Jamaica, thence through the Panama Canal down the West Coast of South America to Valparaiso, returning to Europe via the Straits of Magellan, Buenos Ayres, Montevideo, Brazilian ports, Portugal and Spain. Another fortnightly service is to be inaugurated alternating with steamers making the opposite route; that is, Portugal, Spain, Brazil, Argentine, through the Straits of Magellan, Chile, Peru, through the Panama Canal and thence to Liverpool via Havana, Cuba.

This company will also have a bi-monthly sailing from New York, Cuba, Jamaica, through the Panama Canal and down the West Coast of South America as far as Valparaiso, returning to New York in the same direction.

In view of the recent activity in the passenger traffic, it was announced last week that The Royal Mail Company had placed an order with Messrs. Harland & Wolff, Belfast, for four new steamers to run between New York, West Indies and Central America, calling at Colon, the Atlantic port of the Canal.

From the above facts, it is apparent that this great steamship corporation will have on an average of fourteen steamers, each of between 15,000 and 20,000 registered tons, passing through the Canal monthly.

FREIGHTS AND FIXTURES

We publish herewith the general monthly freight report of Messrs. Hind-Rolph & Co. of San Francisco. This report is specially compiled for the Pacific Marine Review.

310 California Street, San Francisco, Cal., May 10, 1913.

Since the last report we sent you, there has been a decided easing off in the rates for steam tonnage from the Pacific Coast, occasioned principally by the fact that several early vessels were forced on the market at a time when there was not a great deal of cargo available.

As far as sail tonnage is concerned, while the demand is not active, rates are about maintained. The following are the most interesting fixtures we have to report:

Steamers—

"Strath"—Time charter Melbourne, delivery Puget, redelivery 7/-.

"Thor"—Time charter Shanghai, delivery Portland, redelivery 7/6.

Sailers -

"Ludlow" -- Lumber/Coquimbo 62/6.

"Seahome"—Lumber/D. P. Chile or Peru 62/6; option two ports 65/-.



"Andy Mahoney"—Lumber/Salaverry 62/6.

"Clyde"—Portland/U. K. Cont. 43/-.

"Hoche"-Portland/U. K. Cont. 41/6 wheat; 42/- barley; option Puget 3d less.

"Celtic Burn"-Puget/U. K. Cont. 40/-.

"Philadelphia"—Portland or Puget/U. K. Cont. 41/3.

"Asgard"—Portland or Puget/U. K. Cont. 39/6 wheat; 40/- barley.

Messrs. Page Bros., the well known ship and commission brokers of San Francisco, will also prepare each month a special report for publication in the PACIFIC MARINE REVIEW. Their report for the month of April is as follows:

The freight market has been inactive in steamer freights, and what little has been done during April has been on a lower basis.

For Australia

Str. "Strathtay" is reported rechartered from J. J. Moore & Co. by Hind, Rolph & Co. at 8/ charge on deadweight. Delivery Puget, redelivery Newcastle/ Pirie Range. She is due now at Frazer River with a cargo of nails from Cape Breton and will then load lumber as above.

Str. "Strathendric" chartered by A. F. Thane & Co. at 7/ on deadweight. Delivery Puget, redelivery Melbourne. She will come up from Chile in ballast, due at Sound about June 15 to load lumber.

For the Orient

Comyn, Mackall & Co. have rechartered from W. R. Grace & Co. Str. "Thode Fagelund" to load lumber for their principals, China Import & Export Lumber Co. Delivery north to Shanghai and redelivery at Seattle. She is now about ready to load.

Balfour, Guthrie & Co. have chartered Str. "Thor" to load lumber to Shanghai for May loading at 7/6d on the deadweight. Delivery Portland, redelivery Shanghai. Vessel now here discharging coal. "Thor" will load coal back from Japan to San Francisco for account of Western Fuel Company.

During the month of April the United States Government chartered four "Strath" steamers to load coal, May to July, from East Coast United States to Honolulu for orders. The rate of freight paid is \$5.09 per ton, free trimming and free stevedoring at port of discharge.

It is reported that Messrs, J. and A. Brown of Neweastle, Australia, have chartered a "Strath" steamer and Norwegian streamer "Hornelin" at 4/9d to 5/ on deadweight. Delivery Newcastle, redelivery Honolulu, they paying owners besides 12 days' coal and 12 days' hire on completion of discharge, which will enable them to get their steamers here or Columbia River or Puget Sound free of expense as far as time and coal are concerned.

We quote steamers on time charter at 7/ on the deadweight. Delivery north, redelivery Australia, and 6d higher for redelivery China or Japan. Shippers will pay these rates for one to two steamers. Very little new business in the exporting of lumber is being done.

The following list of charters is also of interest:

Br. S. S. "Frankmount," chartered by J. J. Moore & Co., San Francisco, on rate, loads at Eureka and Puget Sound for Australia.

Br. S. S. "Volumnia"-Time by Robert Dollar Co. to replace S. S. "Robert Dollar," disabled. She will arrive at Puget Sound within the week.

- Br. S. S. "Collingham"-Time by J. J. Moore & Co. Comes to Puget Sound from Guaymas, Mex. Lumber for Australia.
- Br. S. S. "Hawkhead"-Time to J. J. Moore & Co. Comes from Valparaiso to Puget Sound. Lumber to Australia.
- Br. S. S. "Harmattan"-Time by Davies & Fehon. Is now loading at Everett. Lumber for Australia.
- Br. S. S. "Trabock"—Time by American Trading Co. Loads lumber on Puget Sound for Australia.
- Nor. S. S. "Artemis"—Arrived at San Francisco from China May 13. Has been taken on time by Hind-Rolph & Co. and is loading cotton for Japan.
- Br. S. S. "Indrashama"—Taken on time by Santa Fe Railroad Company to load cotton for Japan; rate 10/. This vessel will presumably come to Sound for bunkers and some lumber.
- Nor. S. S. "Mathilda"-Now at San Francisco, has been taken on time by Balfour, Guthrie & Co. and loads on the River for Australia.
- Br. S. S. "Cape Finnisterre"-Time by Davies & Fehon. Proceeds to Eureka from Honolulu and thence to Columbia River to finish. Lumber for Australia.
- Nor. S. S. "Terrior"—Time by Balfour, Guthrie & Co. Comes to Columbia River from Guaymas, Mex. Lumber for Australia.
- Nor. S. S. "Bangor"—Time by China Import & Export Co. Comes from Tientsin to load at Columbia River or Puget Sound. Lumber for China.
- Br. S. S. "Glenspean" is now en route from Cardiff with coal to Honolulu. The coal is for the British government.
- Br. S. S. "Ascot" is en route to Honolulu from Portugal with 1,200 emigrants engaged to work on the plantations. Contract labor is not allowed in the States. How about it in our territories?

Nor. S. S. "Christian Bors" sailed from Everett on April 23 for Australia. She loaded a million feet of redwood at Eureka, and the balance on the Sound. Her total cargo was 3,668,000 feet. This vessel was under charter to J. J. Moore & Co. of San Francisco.

FINANCIAL REPORT ISSUED BY O. S. K.

The Osaka Shosen Kaisha, with headquarters at Osaka, Japan, recently issued a profit and loss account and balance sheet for the half year ended December 31, 1912.

The following figures cover that portion of the report showing the disposition made of the profit:

To Insurance fund (slightly over 5 per cent per annum on the reduced book To Repair fund (slightly over 6 per cent per annum on the reduced book value of fleet)548,000.00 To Depreciation on fleet (slightly over 5 per cent per annum on the cost of fleet)653,000,00 1,658,000.00



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To Reserve fund57,500.00 To Directors' and auditors' fees 57,500.00		To Dividends (9 per cent per annum 742,500.00
	115,000.00	Amount carried forward to next term. Yen125,904.49
Balance	1,032,948.96 1,335,455.53	The Osaka Shosen Kaisha has many services, one of its most successful being the Trans-Pacific service between Puget Sound ports and the Orient, having
To Dividend Equalization Fund		connections with the Chicago, Milwaukee & Puget Sound Railway Company.
		

CUNARD STEAMSHIP COMPANY, LTD. ISSUES ANNUAL REPORT

According to the report of the directors of the Cunard Steamship Co., Ltd., submitted at the thirtysixth ordinary general meeting, held in Liverpool on April 10, 1913, the accounts show that the profits for the year ending December 31ts, 1912, including £87,269 19s, 9d. brought forward from 1911, amounted to £1,271,421 18s 4d, without making any allowance for the repairs and renewals of the fleet. It has been found that the amount expended on repairs and renewals varies very considerably from year to year owing to the differences in the types and values of the vessels forming the fleet. The directors have therefore decided to open a repair and renewal fund to be used both to meet current expenses and to build up a reserve against future expenditure. This fund has been opened with a credit of £300,000 from the profit and loss account, and has been debited with the expenditures of the year.

After debiting income tax and debenture interest, reserving £500,652 10s. 9d. for depreciation of ships and wharf properties, and transfering £300,000 to the credit of the repair and renewal fund as mentioned above, there remains at the credit of the profit and loss account £351,970 8s. 0d. Of this amount the sum of £42,254 has been transferred to the credit of the insurance account, and £100,000 to the credit of the reserve fund. A dividend of 5 per cent has been paid on the preference shares to December 31, 1912, amounting to £56,750, and the directors now recommend the payment of a dividend (payable on and after April 14) of 10 per cent on the ordinary shares, including the government share, from which income tax will be deducted, leaving a balance of £88,964 8s. 0d. which is carried forward to the credit of profit and loss account, 1913.

The balance at the credit of the repair and renewal fund stands at £26,985 10s. 6d.; the balance at the credit of the insurance account now amounts to £77,583 15s. 10d., and the reserve fund has been increased to £900.000.

There has been paid during the year £130,000 to the sinking fund for the redemption of the stock established under the government agreement, and in accordance with the provisions of the trust deed of June 17, 1908, £80,000 of the four and one half per cent mortgage debenture stock was redeemed on December 31, 1912.

£175,000 five per cent cumulative preference stock has been issued as fully subscribed in part payment for the interest acquired in the Anchor Line (Henderson Brothers) Ltd.

The grounding of the "Mauretania" in the River Mersey on December 6, 1911, and the fire on board the "Carmania" in dock at Liverpool on June 2, 1912, necessitated the withdrawal of these steamers from the service for considerable periods. The "Lusitania" was

also laid up for some time during the autumn. It has now been found necessary to renew the blading of the four ahead turbines of the "Lusitania", which will unfortunately keep her out of the service until the end of July.

In spite of the smaller number of voyages made by the "Mauretania" and "Lusitania" during 1912, the cabin business for the year created a record in the company's history. Owing to more favorable conditions prevailing in the United States, westbound third class travel reached a higher level than in 1911, and in this improvement the company naturally shared. Freights in all the company's trades were also well maintained and the revenue from this source was satisfactory. General working expenses, however, have very largely increased, owing to the higher level of wages and the enhanced cost of all materials and stores. Special expenditure arising from the coal strike in March amounted to more than £44,000.

The company has expended £26,360 in supplying extra lifeboats and other life-saving appliances to the vessels of the fleet. The whole of this amount has been written off.

Good progress has been made with the construction of the new steamers "Aquitania", "Andania" and

The steamer "Albania", being no longer suitable for the trade in which she was employed, has been sold.

A contract has been placed with Scotts' Shipbuilding & Engineering Co., Ltd., Greenock, for the building of a new passenger and cargo steamer, to be named "Transylvania". It is intended to employ this steamer primarily in the trade between the United States and Mediterranean ports.

The premises at 8 Water Street, Liverpool, being no longer adequate for the requirements of the company's business, the vacant portion of the site of the George's Dock, Liverpool, has been acquired, and a large office building will be erected thereon. Arrangements have been made for borrowing on favorable terms the amount which it is estimated this building will cost, secured by a mortgage on the property.

The various services of the company were carried on with efficiency, and the vessels and machinery maintained in excellent order.

THERE'S A REASON

Mr. Smith came home very late for supper one evening. He called to his wife and told her to cook up everything there was in the house.

"Why, John," she said, "what makes you so terribly hungry?"

"I'm not hungry," he growled. "I'm going to pawn the stove."--Pennsylvania Punch Bowl.



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MUTUAL LINER INSURANCE

The announcement has recently been made that the Hamburg-American Line has entered into an agreement with the Cunard Company and the International Mercantile Marine Company (which constitutes the White Star and other lines), for a mutual insurance scheme with a view to avoiding the alleged high premiums charged by insurance companies.

The Hamburg-American Line operates some two hundred steamers, many of which are, from the modern standpoint of liners, comparatively small, while the Cunard Company operates about forty steamers, all of which are large and valuable, and the International Mercantile Marine operates some eighty steamers, ranging from large to small. Ages, of course, vary from quite old to absolutely new.

From the report of the Hamburg-American Line it is shown that at the present time, or at the time of the last report, they had carried into a reserve insurance fund an amount equal to about \$5,000,000, but that was shown to be insufficient to cover merely a portion of the loss, hence the proposed mutual insurance scheme to do away with insuring even a part of the values with the regular companies but to carry all of the insurance with the mutual organization.

As outlined at a regular meeting of the Line the proposal is as follows:

"All the ships belonging to the company, or in which the company is financially interested, are to be insured at a price to be fixed by the managers according to a certain standard, but the managers are authorized, with the consent of the directors, to run for the account of the company itself a risk on every ship up to half the actual amount of the reserve insurance fund. The premium money thus saved is to be credited at the end of each year to a reserve insurance fund. As soon as this reserve insurance fund has reached the amount of M3,000,000, and until it reaches M5,000,000, only half the amount of the saved premiums will be credited to the fund, the other half going to the year's profit. After the fund has reached the amount of M5,000,000, and until it corresponds to a quarter of the ordinary capital, only a third of the saved premiums will be credited to it, the remaining two-thirds, and the whole of the amount of the saved premiums when the fund has reached its maximum height, being credited to the profits of the year.

"The company is authorized to unite itself with other companies in an association which will take over on a mutual basis the insurance of the ships of

the companies concerned, either for the whole or a part of the value. In this case the part of the value of the ship which is not covered by self-insurance in accordance with the preceding paragraph, or by any other insurance, can be covered by insurance through this association."

For several years past the marine insurance companies have shown that the insurance of liners has resulted in a loss and it is only recently that an increase in rate has been decided on and carried out. This increase is very small, and gauged from returns, will not result in any profit from this class of business. Threats of mutual insurance invariably follow any increase of rates by the regular companies, and it remains to be seen whether or not the proposed action of the trans-Atlantic liners is more than a threat.

It is noted from the proposal that the premium money saved is to be credited, in varying proportions, to the insurance fund and when this fund has reached its maximum height there will be no further credits to that fund. Taking the experience of the companies as a guide, it is certainly problematical when the "maximum height" will be reached. It is noted that the ships are to be insured at a price to be fixed by the managers according to a certain standard. The directors are quite able to direct a steamship business, but are they able to direct an insurance business which will show more profit than that obtained by regular underwriters whose sole business it is to study conditions and to profit, or otherwise, thereby.

The Pacific Marine Review has commented on the mutual plan of insurance and is still of the opinion that if properly carried out it is ideal. Will this proposed combine for mutual insurance actually arrive at an equitable rate to be charged to each steamer, and will it place the funds so arrived at in an account by itself, not to be drawn against except to make good losses? Will it arrive at proper values and franchises? Will it take into consideration the cost of repairs at various ports where it may be necessary to make repairs? To do this will require at the head of the department a thoroughly equipped underwriter who has paid for his experience.

And then the final question, yet to be answered, is this proposal merely a club to force companies to carry on a losing business in order that the business may appear on the books? Have the companies or the proposed insurance combine learned nothing from the immense loss occasioned by the sinking of the "Ti-



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tanic" or the very heavy loss, running into thousands of dollars, by an apparently trivial accident to the turbines of the "Lusitania"?

An insurance company is under heavy expense for the management of its business, but the knowledge is there which has been purchased by the expense of management. To the Hamburg-American Line and its proposed allies the management expense will be less, but will the result, in dollars and cents, show that this economy is justified?

MILLION DOLLARS IN CANADIAN MAIL SUBSIDIES

The Canadian Postmaster General has announced the completion of a contract between his Government and the Allan, Canadian Pacific, Canadian Northern and White Star-Dominion Lines whereby the present weekly mail schedule between the Dominion and Great Britain will be changed, after May 1, into a

triweekly service in summer and a biweekly in winter. provided by 12 steamers in summer and 8 in winter. with an additional vessel maintained to meet emergencies. Sailings will be from Montreal and Quebec in summer and from St. John and Halifax in winter. British mails will be landed in summer at Quebec. though that portion destined for the Maritime Provinces will be taken off at Rimouski.

The cost of this service in subsidies will be \$1,000,-000, divided into 52 equal portions for the 52 weeks, so that two boats in winter will earn as much as three boats in summer. The Postmaster General states that Canada's annual mail subsidies in the past have amounted to over \$650,000 and that in addition over \$180,000 was paid to the United States Government for mails handled at New York. It is stated that Britain will pay for the carriage of British mails to Canada.

LIFE SALVAGE AND LIABILITY OF HULL AND CARGO UNDERWRITERS

At the last session of Congress a bill was passed to the effect that salvors of life in case of shipwreck were entitled to a fair share of whatever salvage might be awarded to salvors of property. As salvage is a direct lien on property salved, whatever amount might be awarded to salvors of life would, by the terms of this statute, be merged in the award to salvors of property only and, failing to recover from the persons saved, the entire salvage award must come from the proceeds of the salved property and would, therefore, be a tax against the underwriters. The question of life salvage, as distinguished from salvage of property, has always been a difficult one, as courts are prone to award larger remuneration for salvage services where the saving of life is concerned, and underwriters on property are averse to paying for something against which they do not insure and which brings to them no advantage. The law of the United States is now similar to the law of England as laid down under the Merchants' Shipping

As regards this law and the liability of underwriters it is refreshing to note the action of the P. & O. Line in recognizing the hardship to underwriters of property in being compelled to pay for life salvage, and also in recognizing their own liability for the safety of passengers carried by their ships.

The case of the S. S. "Oceana" is the one in point, and we quote from a recent issue of "Fairplay" as follows:

"The average statement in connection with the general and salvage charges and apportionment of proceeds by the S. S. 'Oceana' has just been made up by Messrs. Robert Lindley, Sons and Davidson, and underwriters have expressed their pleasure at the generous attitude adopted by the P. & O. Company in connection with the various charges. It will be remembered that this vessel sank off Newhaven on the 16th of March last year. She had on board 46 bags of coin and bar gold valued at £203,411, and 2,126 bars and 9 bags of silver valued at £568,322. Arrangements were made with the Liverpool Salvage Association for the immediate despatch of the salvage steamer 'Ranger,' with divers, and the entire shipment of gold and silver was ultimately recovered with the exception of two bars of silver valued at about £275. Claims were put forward for services in saving life and assisting the 'Oceana' into the more shallow water in which she went down, and ultimately the claims of the London, Brighton and South Coast Railway for life salvage by the 'Sussex' and towage services by the 'Alert' were settled for £7,000, the claim of the 'Queensgarth' for assistance in towing for £500, and the claim for some slight services rendered by the tug 'Nordzee' for £100.

"It was decided to fix the bonus of the Liverpool Salvage Association at £12,000, in addition to a bonus of £1,000 to the five divers by whom the actual recovery was effected. The account of the Trinity House for lighting and watching the wreck during salvage operations and for dispersing it was £2,734. Under the terms of the Merchant Shipping Act, and various legal decisions, the whole of the expenses form a direct charge upon the property saved out of the wreck, but having regard to the fact that the services of the 'Sussex' were purely life salvage and the large expenditure necessary for dispersal of the wreck, the P. & O. Company, although under no legal obligation, have voluntarily agreed to contribute one-third of the

amount awarded to the owners of the 'Sussex' and 'Alert' and costs, and of the account of the Trinity authorities, together amounting to about £11,900. This action, as I have said, has been much appreciated by the underwriters."

WRECKS, CASUALTIES AND MISCELLANEOUS REPORTS

"Bessie Dollar," Br. Str. While entering Oatau struck a submerged rock but evidently sustained little damage. She has since arrived at San Francisco and on examination in dry dock it was found that the stern frame was cracked and several plates will require renewal with others faired.

"Chas. Nelson," Str. On April 23d, after having completed cargo of lumber for San Francisco, caught fire and was very seriously damaged. She was towed to San Francisco and it is estimated that if repaired the cost will be about \$60,000. Vessel and cargo were uninsured.

"Cordova," Str. While proceeding to ports in South-eastern Alaska struck a rock on the west side of Prince of Wales Island on April 23d, but proceeded to Juneau. The cargo was discharged and forwarded to destination and the steamer proceeded to Seattle, where she was docked for survey. Repairs will cost about \$20,000. Steamer insured in the local market and abroad.

"Curacao," Str. While proceeding from Juneau Apr. 30th went ashore but was subsequently floated. Damage not stated.

"Edward Sewall," Sp. Arrived at Kahului May 3rd and was reported ashore but was subsequently floated, apparently undamaged.

"Fulton," Str. Ran ashore on Government Rock near Nanaimo on Apr. 24th, but was floated and proceeded to Seattle. A large part of the keel was torn off and several plates will have to be renewed.

"Ikalis," Br. Str. From San Francisco for Kobe via Puget Sound, grounded off Muroran on May 6th. The vessel was subsequently floated but was badly damaged forward. A portion of the deck load of lumber was jettisoned and the under deck cargo, consisting entirely of cotton, is badly damaged in No. 1 hold.

"John D. Spreckels," Schr. From the fishing banks with a full catch was run into and sunk on Mar. 29th by the Br. Str. "Statesman," bound for Victoria. Two of the crew were drowned, the remainder being taken off by the steamer. The derelict has been towed to San Francisco.

"Lord Derby," Br. Str. On Apr. 4th this steamer, partly loaded, struck an uncharted rock in Rosario Straits and was badly damaged. It will be necessary to discharge part of the cargo in order to effect repairs.

to discharge part of the cargo in order to effect repairs. "Lyman D. Foster," Schr. From Bellingham Feb. 21st with cargo of lumber was abandoned Apr. 30th near Kambara Island. Particulars not yet received. The vessel was towed into Suva May 12th.

"Marie," Fr. Sp. Previously reported ashore and a total loss, has since been reported as having been abandoned at sea, picked up and towed into Hamburg. A part of the cargo has been discharged and large bottom repairs will be necessary. There will be a small salvage to the cargo.

"Mimi," Ger. Sp. Previously reported ashore off Nehalem, Wash., was towed off the beach Apr. 6th, but as soon as reaching deep water she capsized, imprison-



ing several men, including Captain Crowe, the Agent for the Board of Marine Underwriters of San Francisco, who was drowned. Miscalculation as to what was required for the stability of the ship when afloat and the strong wind prevailing at the time of floating are responsible for the final total loss and the deplorable loss of life.

"Oakland," Schr. While crossing out from Siuslaw River on Apr. 21st for San Francisco struck the bar and carried away her rudder. She put into Coos Bay

for repairs.

"Ophir," Br. Schr. From Vancouver, B. C., May 8th for Brunswick cannery, caught fire and became a total loss. Six lives were lost.

"Polaris," Schr. From Fields Landing for Australia, while shifting in the harbor went ashore and before she could be floated suffered considerable damage. She will be towed to San Francisco for examination and if not found to be badly damaged will proceed to destination with additional pumps to keep her free.

"Princess Adelaide," Br. Str. While on passage from

Tacoma for Vancouver struck a boom of logs and suffered considerable damage. The steamer was docked at Esquimalt for repairs.

"Roanoke," Str. While on passage from San Pedro Apr. 8th for San Francisco put into Port San Luis with a broken shaft. She has been towed to San Francisco.

"Rochelle," Str. From Portland Apr. 8th for San Francisco, broke down while on passage and has been towed to San Francisco. The machinery was found to be out of order.

"Temple E. Dorr," Str. While on passage from San Francisco Mar. 29th for Columbia River was in collision with the steamer "Yellowstone" and was obliged to return to San Francisco with bows badly damaged.

"Wm. Chatham," Str. From Port Ludlow with a cargo of lumber for San Francisco experienced very heavy weather and it was necessary to jettison a part of the deck load. The steamer arrived at San Francisco, but considerable damage was found.

"Yellowstone," Str. From Seattle for San Pedro. See report above regarding "Temple E. Dorr."

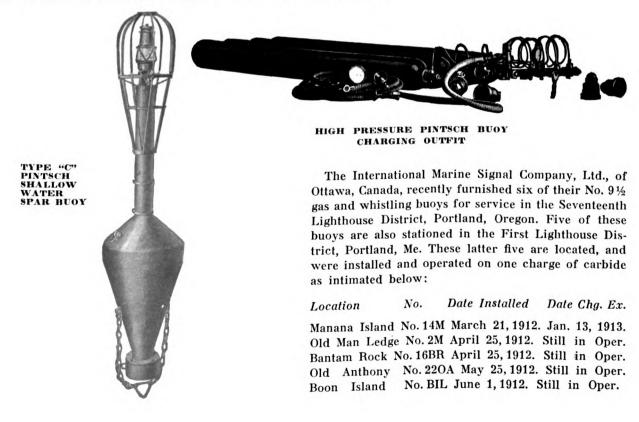
AIDS TO NAVIGATION

The United States Lighthouse establishment has recently made an innovation which will undoubtedly prove a saving in the expense involved in the care of buoys. The 5th Lighthouse District, Baltimore, Maryland, has recently ordered from the Safety Car Heating and Lighting Company, of 2 Rector Street, New York, 16 Type "C" buoys with Pintsch mantle lanterns. The Lighthouse Establishment has just completed a new tender, the "Woodbine," which is designed especially to carry high pressure Pintsch flasks for charging these buoys. The "Woodbine," which is a small boat, about 95 feet over all, is the first motor propelled tender in use by the United States Lighthouse Establishment, and is equipped with a 125-

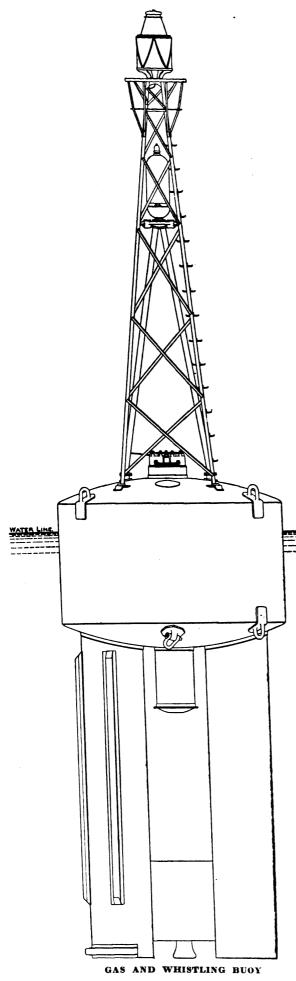
horse-power Corliss motor, a machine of the 3-cylinder, 4-cycle type, with cylinders 13½x15½, weighing 1500 pounds.

The buoys will be charged on station by equalizing pressure from high pressure Pintsch flasks carried on board the "Woodbine," and with this system the small boat will be able to do the work of a first class tender at much less expense. The Safety Car Heating and Lighting Company announces that it is making arrangements to equip its Pintsch Plant at Baltimore with a high pressure compressor to take care of the work of charging these flasks.

The 16 new buoys will be used to mark the Fort McHenry Channel, which is the approach to the city of Baltimore.







With the exception of the Manana Island buoy, which ran for practically ten months, the other buoys are still in commission on their first charge of carbide which in all cases is 3000 lbs. These buoys are equipped with 375 M.M. lanterns, which give a power of 730 candles through the lens. The buoys are also all equipped with receptacle for submarine bell, manufactured by the Boston Submarine Signal Company, as well as with the whistle operated by the movement of the buoy on the waves on the old Courtney princi-

INTERNATIONAL CONFERENCE ON SAFETY AT SEA

Secretary of Commerce William C. Redfield has made further preparations for the International Conference on Safety at Sea to be held in London this summer, by designating several committeees composed of officers of the Government to consider the various topics prescribed by the Alexander resolution.

He believes that these committees should include also representative shipbuilders, shipowners, and ship captains, representatives of the maritime exchanges and chambers of commerce, of organizations of licensed deck officers and engineers, of American seamen, of the technical schools, marine underwriters, wireless companies, New England deep-sea fishermen, and others. For the past month he has been in touch with representatives of these maritime interests so as to be able to designate complete committees as soon as Congress acts.

The deficiency appropriation act of March 3, 1905, forbids any department to accept any voluntary service for the Government or employ personal service in excess of that authorized by law, except in sudden emergency involving loss of life or property. Efforts last January and during April to secure a small appropriation for the work failed, and Secretary Redfield believes that preliminary work cannot wait any longer. A further effort to secure \$5,000 or \$10,000 may be made later. The work of the committees designated will be under the general direction of Commissioner of Navigation E. T. Chamberlain, representing Secretary Redfield for the purpose.

The Treasury, War, Navy and Agricultural Departments are co-operating with the Secretary of Commerce in this preliminary work. The Committee on Bulkheads and Hull Construction comprises Rear Admiral W. L. Capps, U. S. N., former Chief of the Construction Bureau; Naval Constructor David W. Taylor, U. S. N., and George Uhler, Supervising Inspector-General of the Steamboat-Inspection Service. James Donald, naval architect, of the Fore River Shipbuilding Company, will be consulted as the representative selected by the shipbuilders and shipowners.

General Superintendent S. I. Kimball, of the Life-Saving Service, Mr. Uhler, and Capt. D. P. Foley, of the Revenue Cutter Service, comprise the Committee on Lifeboats, Davits, Life Rafts, and Life Preservers. Capt. Foley will also act on the Committee on Efficiency of Officers and Crews with Capt. Henry M. Seeley, Supervising Inspector of the New York District, and Assistant Surgeon General W. J. Pettus, of the Public Health and Marine Hospital Service.

The Committee on Fire Protection temporarily will consist of Mr. Uhler and Supervising Inspector Nils B. Nelson, of the Cleveland District, who will soon proceed to New York to consult with marine underwriters and others concerned, and will also co-operate with the Hull Construction Committee.

The Committee on Aids and Perils to Navigation, covering ocean lanes, dangers from ice and derelicts, searchlights, rules of the road, dissemination of storm and weather signals and similar subjects, consists of Capt. Commandant E. P. Bertholf, of the Revenue Cutter Service; Commander George F. Cooper, U. S.N., Hydographer; Commissioner of Lighthouses G. R. Put-

nam, and Prof. Alfred J. Henry, of the Weather Bureau.

The committees will organize within the next few days, and by consultation and correspondence secure a body of intelligent opinion on the various subjects involved for the use of the American delegation to the International Conference at London late in the autumn. The delegates to the International Conference will probably not be selected before June or July.

BRITISH COLUMBIA SHIPPING NOTES

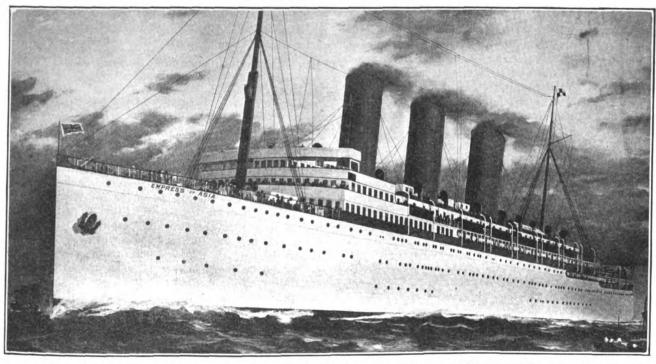
The Royal Mail Steam Packet Company has completed arrangements for a monthly service between European and northern Pacific ports, via Suez and the Orient, its first sailing being the British "Monmouthshire" in early May, which is to be followed by the "Flintshire" on regular schedule. The route will place it in active competition with the Blue Funnel Line, which maintains a monthly service between Liverpool and Puget Sound.

The Hamburg-American Line intends establishing a monthly transpacific service between oriental and British Columbia ports, an extension of the company's Hamburg-East Asia service, and began with the cating and turbine engines. The "Niagara is to be fitted as an oil burner upon her arrival on this coast.

Canadian Pacific Operations

The Canadian Pacific Railway Company intends adding two 5,0000-ton turbine steamers on its triangular run between Vancouver, Victoria and Seattle. These vessels will be built in Great Britain, and it is expected will be completed in July 1914. The "Princess Victoria" and "Princess Charlotte," on this run, are rapidly becoming inadequate to handle the traffic.

The chief engineer of the Canadian Pacific Railway Company reports the following difference in cost of fuel on vessels plying between Vancouver and Vic-



S. S. "EMPRESS OF ASIA." HER SISTER-SHIP, "EMPRESS OF RUSSIA," IS NOW ENROUTE TO THIS COAST

"Sithonia" which left in February and sailed from Puget Sound and British Columbia ports at the end of Apirl.

The East Asiatic Steamship Company's vessel "Arabien" recently entered Vancouver, B. C., being the first of this line arriving at that port, and it is understood by U. S. Consul-General David F. Wilbur that on account of the voyage being successful a monthly service will be established.

A new 13,000-ton steamer, the "Niagara," to be added to the Canadian-Australian line between Vancouver and Australian ports, will be one of the largest vessels sailing out of Vancouver. This vessel left Sydney in early May, and will arrive at Vancouver late in the same month. The vessel will have combined recipro-

toria and Seattle since oil burners were substituted for coal burners:

	Cost per
"Princess Victoria"—	day.
100 tons of coal, at \$4.50	 .\$450.00
9 firemen, at \$55	 . 16.50
9 trimmers, at \$45	 . 13.50
Food for 18 men	 . 7.56
Total	 \$487.56
334.17 barrels of oil, at \$0.90	 \$314.25
6 firemen for oil	 . 11.10
Food for 6 men	 . 2.52
Total	 \$327.87
Difference in favor of oil	 \$159.69

	Cost per
"Princess Charlotte"—	day.
100 tons of coal, at 4.50	.\$450.00
13 firemen, at \$55	. 23.80
10 trimmers, at \$45	. 15.00
Food for 23 men	. 9.56
Total	\$498.36
334.17 barrels of oil, at \$0.90	.\$314.25
6 firemen for oil	
Food for 6 men	
Total	8327.87

Plans for Utilizing Panama Canal

It is reported that the American Navigation Co., incorporated in Delaware, will inaugurate a service between New York and Puget Sound ports, and possibly with British Columbia ports, when the Panama Canal opens. The company has ordered two vessels built for this trade and it is expected that the fleet will consist of 15 tramp freighters when the traffic warrants. It is announced that there will be no regular sailing dates, the entire fleet operating on a tramp basis.

James Fergus MacLellan, of Glasgow, formerly Managing Director of the Laird Line, on a recent visit to Vancouver, carefully examined harbor conditions and it is thought with a view to extending that line to British Columbia ports. He pointed out that the voyage from British ports through the Panama Canal to Vancouver will be nearly as cheap as to eastern Canadian ports, doing away with the rail journey across the continent, and will be a great opportunity for British Columbia to secure British immigrants.

Wheat for Japan

While the Panama Canal opening has been anticipated with interest as the means of making Vancouver a grain-shipping port, Japan has secured the first large shipment of wheat from this place, which is the forerunner of a new phase of Vancouver development. The Japanese steamer "Fukoko Maru" is loading 6,600 tons of sacked wheat from Alberta for Yokohama for distribution to different parts of Japan. Owing to the decreased Australian wheat crop, it has been necessary for Japan to look for a temporary supply, which is being bought from western Canada through Vancouver.

While grain shipments have been shipped from this port to Mexico and the Philippine Islands, this is practically the first large shipment leaving Vancouver. The wheat all came from Alberta over the Canadian Pacific Railway in bulk and was sacked in Vancouver, prior to loading. It is expected that several vessels will call at this port before this demand is supplied, and the trade once established may become permanent.

Sugar from Cuba

It is announced that a Strath Line steamer has been chartered to bring an experimental cargo of sugar from Cuba to the Vancouver refinery—the first shipment of sugar from Cuba for this port. The bulk of the sugar imported by the refinery has come from Java, with occasional shipments from Fiji, Peru, Formosa, and British Guiana.

Trade of British Columbia-New European Line

The Pacific Great Eastern Railway Co., it is said, will operate a steamer line to Victoria, British Columbia, as soon as it is in a position to operate trains eastward out of Newport, British Columbia. It is intended that parallel rates will be given Victoria and Vancouver in order that business houses will be given the same advantage in supplying the needs of the interior of the Province. This trade is now principally supplied by business houses of Edmonton.

It is also intended soon to establish a steamer line on the triangular run between Vancouver, Victoria and Seattle, with ultimate extension to Tacoma and other Puget Sound ports and also to San Francisco, California.

The secretary of the Vancouver Board of Trade advises the United States Consul-General at Vancouver that from communications received from agents of the Chesapeake & Ohio Steamship Co. it is expected that its representatives will visit Vancouver to look over the ground for establishing a steamship line between that port and Great Britain.

MECHANICAL GEARING FOR THE PROPULSION OF SHIPS

By the Hon. Sir Charles A. Parsons, K.C.B., D.Sc., F.R.S. Vice-President, Institution of Naval Architects. Extracts from paper read at the Spring Meeting of

the Fifty-fourth Session of the Institution, London, England, March 13, 1913.

The subject of the application of steam turbines with mechanical gearing to ship propulsion has already been brought before the notice of this Institution in papers read by the author in 1910 and 1911. These papers described the experimental installation in the cargo steamer "Vespasian," the successful results obtained with which have since that time led to considerable development in this type of propulsion. It is the object of the present paper to give an account of the progress that has been made up to the present time.

Geared turbine propulsion is in this country now well advanced beyond the experimental stage. There are already in actual service cargo steamers, channel steamers and warships, together representing a total of about 26,000 H.P. developed by steam turbines and transmitted through mechanical gearing, and there is at the present time under construction turbine machinery and mechanical gearing representing a transmission of over 120,000 H.P., including two installations of over 20,000 H.P. each.

Geared turbines have been fitted in two channel steamers for the London and Southwestern Railway Company's service between Southampton and Havre, the S. S. "Normannia" and S. S. "Hantonia," of 1,900 tons displacement, having a shaft horse-power of 5,000 at a service speed of about 18 knots. These installations were fully described in a paper read before this Institution by Professor J. H. Biles in 1912. They continue to show an economy, as compared with other turbine steamers on the same service, of about 40 per



cent, due partly to increased efficiency of turbines, partly to increased efficiency of propellers with the lower revolutions adopted, and partly to improved form of vessel incidental to the reduction in boilers and the adoption of twin screws. The "Normannia's" gearing has been recently inspected after steaming over 26,000 knots, and was found to be in perfect condition; no wear whatever can be detected.

Geared turbines have also been installed in three channel steamers for the Indian Ferry Service between India and Ceylon, in accordance with designs and specifications prepared by Sir William White. The first of these, the S. S. "Curzon," has successfully passed her speed trials and considerably exceeded the speed guarantee undertaken by the builders of the vessels and propelling machinery, Messrs. Inglis & Co., Glasgow. The reduction gear was made by the Parsons Marine Steam Turbine Co.

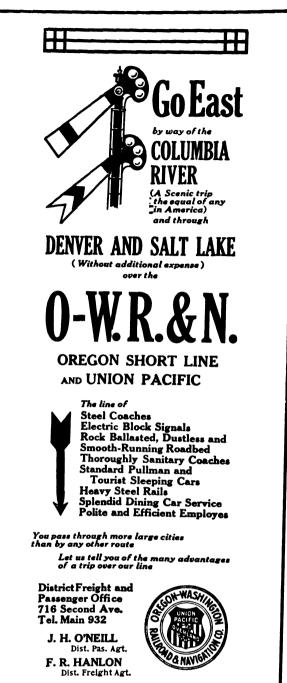
A cargo steamer built for the Cairn Line by Messrs. Doxford, Sunderland, has been recently fitted with an installation of geared turbines similar to that adopted in the "Vespasian," consisting of two turbines, a highpressure and a low-pressure turbine in series, capable of developing about 1,600 S.H.P., which is transmitted through mechanical gearing to a single propeller shaft at 63 revolutions per minute, the speed of the vessel being about 101/2 knots. It is interesting to notice that a coal consumption trial has been made with this ship running side by side with a sister ship, the S. S. "Cairngowan," with exactly similar boilers and propeller, but with triple expansion reciprocating engines, the coal supplied being of the same quality and measured in the same way on both ships, and the geared turbine ship has shown a saving of 15 per cent in the coal consumption.

So far no limit in regard to the surface speed of the teeth has been discerned, and there is no evidence of any limit to the power that can be transmitted by mechanical gearing with gear wheels suitably designed. It appears that this type of propulsion can be adopted with advantage in all classes of work, ranging from low-speed cargo steamers to high-speed destroyers and battleships and liners of large powers, and there can be little doubt that it will be extensively employed for all classes of ships in the near future.

For the purpose of observing as closely as possible the practical requirements in regard to accuracy of cutting of gear-wheel teeth, two gear-cutting machines were installed in the works of the Parsons Marine Steam Turbine Company in 1910. With these machines, which were built by Messrs. William Muir & Co., Manchester, tooth faces are automatically generated by the process known as "hobbing." These two machines have, since they were installed, cut gear wheels representing a transmission of about 50,000 H. P., and the experience thus gained in this work has enabled several important improvements to be made to them.

Two similar machines were installed in the works of Messrs. C. A. Parsons & Co., Heaton, Newcastle-on-Tyne, for the manufacture of geared plant for the driving of electrical generators, rolling mills, works shafting, etc.

Examination of the teeth of gear wheels which have been running for some little time, transmitting large powers, shows the work to be distributed over the teeth with fair uniformity, and confirms the opinion expressed by the author before this Institution in 1910 in his reply to the discussion on the first of the papers



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above referred to, that with double helical gear such devices as floating frames for the pinions or hydraulic pistons to distribute the load equally over the pinion bearings are totally unnecessary, the natural elasticity of the supporting structures providing all the accommodation necessary, assuming, of course, reasonably accurate alignment of the shafts. The pinions are in all cases connected to their turbine shafts by flexible couplings, which allow them longitudinal freedom, and this in itself, with double helical gears, ensures that the load is practically equally divided between the right and left-hand portions of the gear.

Careful investigations have been made of the causes producing noise, with the object of removing such causes and obtaining a silent gear. These investigations show the noise to be due to slight inaccuracies in the teeth, the order of accuracy required for a silent gearing being higher than present gear-cutting machines are capable of affording.

Its source was traced to the parent gear of the gearcutting machine, viz., the single worm and the 160 teeth of the worm wheel which rotated the table on which the work was mounted while the wheel was being cut. The inaccuracies of this gear were carefully measured, and found to be co-periodic with the worm-wheel teeth, and to have a double amplitude of about four-thousandths of an inch.

In the case of the gear wheel referred to above, as there did not appear at the time to be any means of removing the irregularities from the teeth, and very silent running was desired in this instance, stiff springs were fitted above and below the bearings, having a small amount of initial compression and permitting a movement of about one-hundredth inch as the load was increased to its full value. The pinions being thus flexibly supported, noise and shock were to some considerable extent intercepted, instead of being transmitted to the structure of the gear case.

It was recognized, however, that spring supports were an imperfect remedy, the real remedy being a higher degree of accuracy in the teeth. To attain this it was necessary either greatly to increase the accuracy of the parent gear or to devise means of cutting which did not reproduce the errors of the parent gear, and, what is still more important, avoided periodicity in the residual errors. It was obvious that progress along either of these lines, or possibly along both at once, would result in valuable improvement of mechanical gearing for the transmission of large powers at high speeds.

It is doubtful whether at the present time a worm and worm-wheel drive of the strength required in gear-cutting machinery can be relied upon to have a higher degree of accuracy than the drive of the machine referred to above, but by the use of multiple drives, such, for instance, as several worms driving one worm wheel, it will be readily seen that these errors would, to a considerable extent, compromise each other.

An improved method of cutting gear-wheel teeth has, however, been developed by the author and his colleagues, which must now be described. Primarily, it aimed at destroying the periodicity of the errors, but incidentally it also accomplishes a considerable reduction of the errors themselves present in the parent gear.

In the process ordinarily adopted, in which the work is mounted on a table rotated by means of a worm and worm wheel, the latter being attached permanently to the table, the errors will be some function of the

angular position of the work, and, therefore, lie in planes through the axis of rotation; and if, as is mostly the case, the errors of the parent gear are periodic, these planes will lie at equal angular intervals, and will come into mesh periodically. Now, it will be seen that, if the work is given a small steady advance in relation to the table, the errors, instead of lying in planes through the axis, will lie in spirals around the wheel, and that when put to work they will be obliterated and leave a true wheel.

While the most important effect of this arrangement is that the errors in the teeth will lie in very oblique spirals around the wheel, resulting in great uniformity in the gearing, at the same time it has also an important effect in reducing the errors themselves.

If the periodic error in the worm gear of the original table be represented by a sine curve with a period corresponding to the teeth of the worm wheel, that is 160 per revolution, an advance of 1 per cent results in the phase of the error being shifted 1-616 of a complete pitch at each revolution of the work. With the cutter advancing across the wheel, the result is a series of overlapping cuts of varying depth, the maximum depth being, say, about four-thousandths of an inch below the minimum. These have been represented on the diagram, the advance of the cutter across the wheel being taken at 1-20 inch. per revolution, whilst the amplitude of the error, and, therefore, the position of the cutter is represented greatly enlarged in the vertical direction. It will be seen from this how the lowest positions predominate, and a series of cuspidal ridges remains of about one-fifth the magnitude of the original errors.

Three things have been accomplished; in the first place, the errors have been reduced to about one-fifth of their original magnitude; secondly, they are spread across the wheel in such a way that periodicity is avoided; and, thirdly, they consist of cuspidal ridges which will be easily reduced by grinding or wear and leave a practically true wheel.

NEW TAHITI-SAN FRANCISCO LINE PROPOSED

The Foreign Trade Department of the San Francisco Chamber of Commerce has been informed by North Winship, American consul at Papeete, Tahiti, that the Compagnie Navale de l'Oceanie is contemplating the establishment of a steamship line between Papeete and San Francisco. The company proposes, at the beginning, to place one steamship on the route, to make nine trips a year between the ports named.

The withdrawal of the steamship "Mariposa" from the Papecte-San Francisco run, according to Consul Winship, was greatly regretted by merchants and others in Tahiti.

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Leslie's Weekly.



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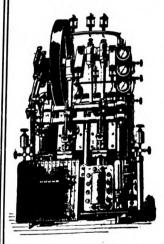
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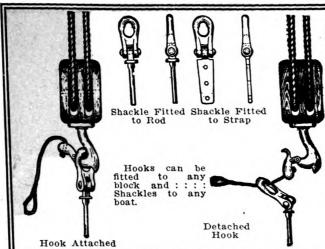
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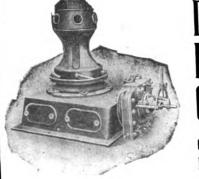
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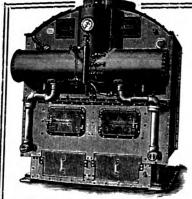
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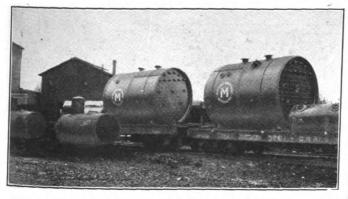
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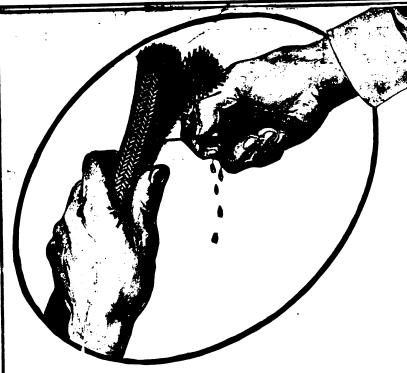
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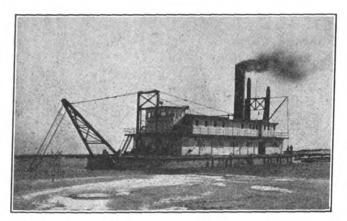
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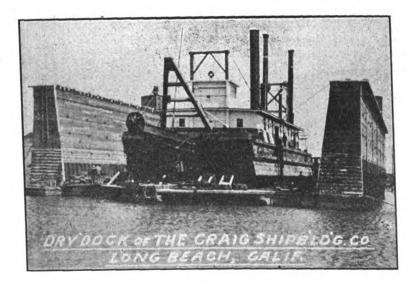
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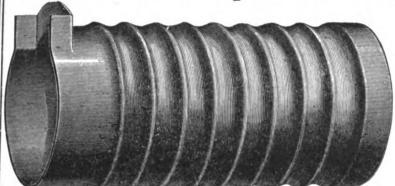
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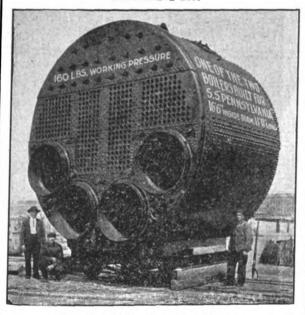
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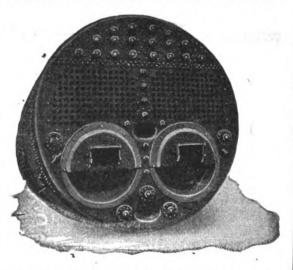
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PACIFIC MARINE REVIEW

The Only Shipping Paper Published on the Pacific Coast.

SAN FRANCISCO, CALIFORNIA

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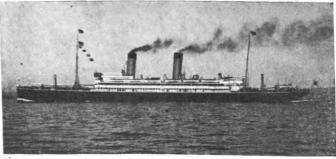
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Fourth Floor Merchants National Bank Building, 625 Market Street, San Francisco

Pacific Marine Review

Volume X. SAN FRANCISCO, JUNE, 1913.

NUMBER 6.

"KEEP THE FLAG A FLYING"

An Earnest Appeal to the Nation at Large

"One form of national greatness is based upon the exploitation of a nation's marine possibilities; the other on its continental possibilities. The British Empire and Japan are instances of the first, Russia, the United States and China, of the second. But no nation's complete stature is attained until both arms are exercised. Britain, at present the most ambidextrous of the family of nations, has exercised her continental muscles in the growth of her colonies; Germany and Japan have within the last twenty years performed prodigies of marine expansion; but the United States, after a long period of continental development, will double its wealth and power for usefulness by superimposing upon its already stupendous continental civilization a marine civilization perhaps as great as that of Britain.'

The above is quoted from Mr. P. H. W. Ross, the president of the National Marine League, which is founded to revive the American Merchant Marine and thereby supplement and round out our continental development. To continue in the strains of this most uncommon common sense I again quote Mr. Ross:

"The streets of the world are the wide oceans! America can no longer content herself with homemarket business; no longer confine her maritime energies to shipping around her own coasts.

The condition of labor, agriculture, manufactures and indeed the whole economic continuance of American commercial life demands that America "go forth" and sell her products to the wide world; that the Stars and Stripes be again a familiar and welcome visitor in every port of the globe."

This league was organized:

To awaken all the people of the United States, whether living on the seacoast or in the interior, to a full understanding of the vital importance of re-establishing an American over-seas commercial marine.

To separate the question of reviving American shipping from the special interests and to secure its treatment upon the broad basis of national policy and interest.

To emphasize in the public mind the national economic necessity of our growing export trade and to show the part which an American commercial marine must play in its further expansion.

To promote general recognition of the fact that American trade termini are not at our own seaports, but are located across both oceans in the great worldmarkets for our products.

To secure the adoption, as a matter of national economic policy, of legislation that will enable American railroads to extend their transportation facilities to foreign ports; to establish, if advisable, their own lines of steamships connecting therewith; to advocate for export merchandise international pills of lading through to destination and free from restrictions properly applicable to domestic transportation only.

To urge upon the American people the opportunity offered by the opening of the Fanama Canal and the necessity of providing a modern merchant marine of

their own to utilize this new waterway and trade route for the further expansion of our foreign commerce, particularly with South America and Asia.

To formulate for the accomplishment of these purposes definite measures which will command the support, from the standpoint of our national interest and development, of all who recognize the importance of these objects, and particularly to combine in one non-partisan program the creation of "free port" areas and the granting of payments for carrying the mails sufficient to secure the establishment of American steamship lines.

To inspire the public mind, especially in the interior of the country, with a perception of the vital need to the people and industries of a Merchant Marine owned by Americans and flying the American flag.

To afford our manufacturing industries export outlets for their products to supplement this country's capacity for domestic consumption.

To provide labor with better opportunity for steady employment by reason of the expansion of manufactures that accompanies a large foreign trade.

Fo facilitate and extend the service and usefulness of our American railroads as carriers of merchandise for export to the same extent that Canadian railroads have extended their service.

To render our navy truly efficient and mobile by the creation of an adequate and supporting Merchant Marine, from which source alone can a Naval Reserve be properly maintained.

To accomplish these ends by the co-operation of all political parties.

And having joined the "East," "South," and "West" through the agency of the Panama Canal to use that facility intelligently in the building up and binding together of a great solidarity of national industrial civilization.

The great commercial nations at present holding the foreign carrying trade of the world are our competitors in the very markets abroad that it is essential to our own commercial salvation we should develop and maintain for the support of our labor, manufacturing and export industries here in America.

It would be foolish if, after building the Panama Canal, we were to allow it to be used for foreign trade purposes almost exclusively or mainly by merchant ships of other great commercial nations.

"Keep the Flag Flying" is not merely a pleasing and patriotic phrase; it is a stern, practical, business necessity of every-day insistence.

It is impossible to restore the American flag to the wide seas unless certain remedial and adequate legislation is effected.

No enduring legislation is possible unless there is first an enduring, imperative public sentiment that demands such legislation.

From whom can such an imperative demand come? From the great "majority-vote" of this country; that is, from the inland voters of America. And they, unfortunately, are indifferent.



Generated on 2024-07-25 15:35 GMT Domain, Google-digitized These facts are very evident, viz:

That America has practically no foreign-going ships. That America has urgent need of foreign-going ships.

That the chief obstacle in the way of America's owning ships is the inertia or indifference of the voters of Inland America.

Local and sectional jealousies are not worth permanent consideration; as well have your right arm jealous of your left arm. It is all one body. Jealousies are soon dissipated in the clear light of American justice and common sense. Moreover, details can always be adjusted.

But indifference is certainly the worst kind of a stumbling block.

Now comes the question of how to overcome that indifference.

The people of the interior must remember that "Trade follows the Flag," and that if Interior America really wants to sell its manufactures overseas, it must provide the nation with a flag to precede that trade. No other advertisement is one-tenth so effective as the

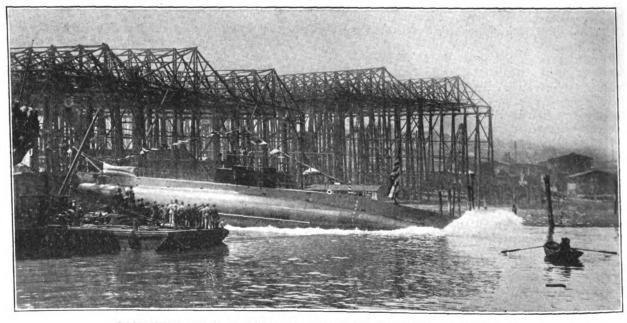
flag of the nation that sells the goods at the stern of the ship that carries those goods.

That flag says "America" in every tongue of the

As an advertisement pure and simple, it is more valuable to the manufacturer of St. Paul or Minneapolis or Chicago or St. Louis than that manufacturer's own brand on the other side of his packing case.

So it means actual money in the pockets of every industrious citizen of Inland America to have American ships on the high seas; not to mention the far higher and nobler aspects of the case.

It is the purpose of the National Marine League to carry this message to the voters of the inland states. It will naturally necessitate a large campaign and the expenditure of much money, but the result will be beneficial beyond computation to every laborer, farmer, merchant and manufacturer in every state of the Union. For the purpose of such campaign, donations of money are urgently needed which will be gratefully received by the National Marine League, Wilkins Building, Washington, D. C.



LAUNCHING OF U. S. SUBMARINE."H-2" AT UNION IRON WORKS.

Among the contracts for new vessels secured by the Union Iron Works during the last three years, none have been more important than those of the seven submarines secured from the Electric Boat Company.

The original contract for all of these boats was secured by the Electric Boat Company from the United States Navy Department, and sublet to the Union Iron Works Company, as they are intended for use on the Pacific Coast. The construction in the local yard has been entirely under the supervision of Mr. W. R. Sands, the representative of the Electric Boat Company.

The first two submarines, F-1 and F-2, included in this fleet were delivered to the Government some time ago. H-1 was launched on Tuesday, May 6, and is now being turned up to undergo the severe trials and tests required by the Navy Department.

H-2 is a sister ship of H-1 and was launched on June 4, at 1 P. M. Mrs. W. R. Sands acted as sponsor for the ship and is now eligible as member of the Sponsors' Club, including all the ladies who have

acted in this service for vessels of the new navy.

The three remaining submarines now under construction are making rapid progress, and the dates of launching will be announced in the near future.

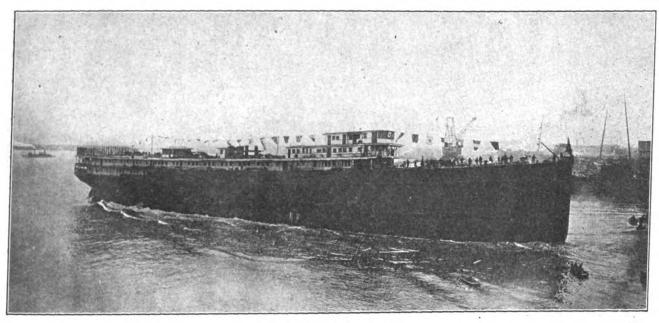
H-2 represents not only the most advanced types of submarines, but is one of the largest and fastest boats of this type that has ever been constructed. The vessel is 150 feet 31/2 inches long, 15 feet 91/8 inches in diameter, and presents the image of the usual Perfecto shape cigar.

The total displacement submerged is 467 tons. The armament consists of four torpedo tubes in the bow, arranged in pairs with a single 5.2 meter torpedo in each tube. There are also four spare torpedoes stowed abaft tubes, with suitable loading gear, so that each tube can be reloaded as soon as it has sent its charge away on its mission of destruction.

Each torpedo after it is launched in the water is self-propelling and capable of obtaining a speed of 30 knots per hour under its own power.

The main propelling engines consist of two heavy oil or Diesel engines with a collective shaft horsepower of 950 at 450 R. P. M. These engines are used for propulsion while the vessels are on the surface, capable of driving the boats at a speed of 14 knots per hour.

Heavy oil engines were adopted because they afford the most economical motive power with the desired minimum of fuel, giving these boats a radius of action amounting to 2,000 miles. It would be impracticable to use oil engines in the submerged conditions, on account of the gases and fumes which they produce. Powerful motors are therefore provided for propelling the boats when submerged. These consist of two motors capable of working under an overload up to 310 kilowatts.



S. S. "CONGRESS."

The steel passenger liner "Congress," building for the Pacific Coast Steamship Company for service between Seattle and California ports, was recently sent down the ways at the yards of the New York Shipbuilding Company, Camden, N. J.

The "Congress" was christened by Miss Mary Phelps Jacob, a niece of Mrs. William M. Barnum, wife of the president of the Pacific Coast Company.

This vessel is of the following dimensions: Length over all, 442 feet 6 inches; breadth, moulded, 54 feet 9 inches; depth to upper deck, 29 feet. The upper deck is the lowest passenger deck. From the upper deck to the shelter deck is 9 feet 6 inches; from shelter deck to bridge and forecastle deck, 8 feet; from bridge and forecastle deck, 8 feet 4 inches. The total depth to boat deck is therefore 54 feet 10 inches.

The vessel is constructed generally of steel and to the highest classification requirements of the American Bureau of Shipping. She has five complete steel decks running from stem to stern and ten complete steel bulkheads extending to the upper deck, dividing the hull into eleven water-tight compartments. The double bottom is exceedingly heavy and strong and extends to the upper turn of the bilge.

The "Congress" has been made still more efficient against outside injury by the installation of watertight bulkheads running longitudinally six feet from the outer skin of the vessel and extending the full length of the boiler compartments.

The "Congress" will carry 3,400 tons (dead weight) of freight in five freight compartments. There are accommodations for 400 first-class passengers, 100 second-class and 300 third-class, besides a crew of 175. The life-saving equipment is superior to the Government requirements, and boats and rafts have been put through the most severe tests.

Dreadnought tiling has been used extensively throughout the "Congress," being laid in the main dining room, first-class smoking room, baths and all cor-

ridors on steel decks.

The propelling power for this vessel is supplied by ten boilers in two main fire rooms and two sets of triple-expansion engines of 3,700 horsepower a piece, and a speed of about seventeen knots is expected. The electrical installation is very complete and large, there being three fifty-kilowatt generators installed.

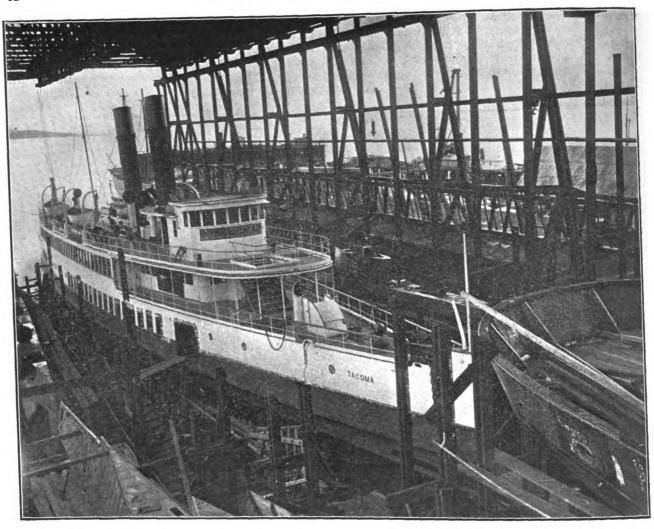
The "Congress will leave for the Pacific Coast about the beginning of July and is expected to arrive at San Francisco about September 1. Captain H. C. Thomas, formerly master of the S. S. "President," has gone to Camden, and will command the new vessel on her first voyage to the Pacific. In this connection we congratulate the management of the Pacific Coast Steamship Company in selecting for the commodore ship of the fleet such a capable, experienced and genial commander as Captain Thomas has proved himself to be through his many years of service with this, the largest Coast steamship company on the Pacific.

Captain Zeh, who is still in command of the S. S. "Queen," has been appointed chief officer of the "Congress," to assist Captain Thomas in the equipment and navigation of the new steamer from Camden, N. J., and will make the voyage from the Atlantic to the Pacific in this capacity. Captain Zeh will again, on his return to the Coast, assume command of one of the company's larger steamers, in which capacity he has given every evidence of absolute competence.

The "Congress" has been chartered by Williams-Dimond & Co. to load a general cargo at Philadelphia, from which port the vessel will depart about July 8, coming direct to San Francisco. She is expected to make the voyage in forty-five days.

The Artic exploring ship "Fram," owned by Captain Roald Amundsun, will be one of the first ships to pass through the Panama Canal, according to a recent announcement made by the War Department.





The S. S. "Tacoma" has recently been completed by the Seattle Construction and Drydock Company. This photo shows the vessel just before the launching took place. The "Tacoma," which has been built for service between Seattle and Tacoma, developed a speed of twenty knots on her trial trip.

NEW VESSEL FOR SAN FRANCISCO SERVICE OF UNION STEAMSHIP COMPANY OF NEW ZEALAND, LTD.

Mesrs. Hind, Rolph & Co., general agents for the Union S. S. Co. of New Zealand, Ltd., have received advices stating that the new vessel, R. M. S. "Willochra," 12,000 tons displacement, will be placed on the San Francisco-Tahiti-New Zealand Australian service, sailing from this port on her maiden voyage October 15th.

This ship is of the latest design and is fitted with the most modern appliances for the comfort of passengers. She is 410 feet long, and the machinery is of the quadruple expansion type, generating 9,000 horsepower.

Accomodation has been provided for over 450 passengers in all classes, special features being the extra large dining, drawing and smoking rooms in both the first and second class. Every cabin is fitted with an electric fan and the first class saloon has also an open smoking lounge.

There are a number of single berth cabins in the first class.

The vessel is fitted with the latest high power Marconi wireless instruments and ample life boat accomodation has been provided for the passengers and crew.

O. S. K. BUILDING VESSELS ON THE ISHFRWOOD SYSTEM IN JAPAN

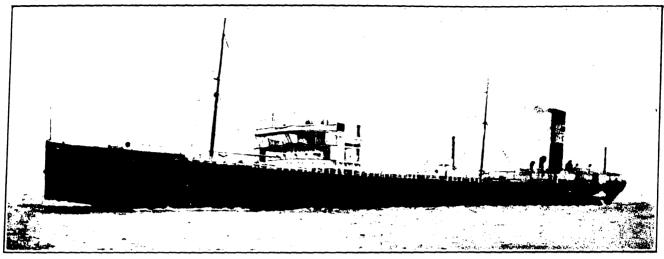
The Osaka Shosen Kaisha have two steamers building at the Osaka Iron Works, Osaka, Japan.

Both of these are cargo steamers with 'tween decks throughout and are built on the Isherwood longitundinal framing system. These vessels are 305 feet long between perpendiculars, 43.75 feet in breadth moulded, and 27.25 feet depth moulded. They will carry 5,000 tons deadweight on a mean draught of 23 feet with freeboard and are expected to have a sea speed of 10 knots.

The Osaka Shosen Kaisha adopted the Isherwood system for two steamers of the same dimensions built in England last year, but to build any vessel on this system at the shipbuilding yards in Japan is quite a departure from the usual practice.

LARGEST WIRELESS STATIONS AFLOAT

It is interesting to note that the new leviathans, "Imperator" and "Vaterland" of the Hamburg-American Line, are equipped with the Telefunken system of wireless telegraphy. These will be the largest wireless stations ever installed on passenger ships to date. The press service for these steamers will be furnished from the Telefunken high power stations at Sayville, Long Island.



THE LARGEST TANK STEAMER AFLOAT, THE "SAN FRATERNO," 15,700 TONS CAPACITY.

The S. S. "San Fraterno," the largest oil tanker in the world, has a deadweight capacity of 15,700 tons and is constructed of steel on the Isherwood system, to Lloyds highest class.

The dimensions of this vessel are: length, 548 feet over all; breadth, 66 feet 6 in.; depth, 41 feet 6 in. The propelling machinery consists of a set of quadruple expansion engines. The boilers are fitted for burning fuel oil.

The S. S. "San Fraterno" is the first of the ten new vessels now building for the Eagle Oil Transport Company, the fleet of which is chartered by the Anglo-Mexican Petroleum Products Company, Ltd., for the carrying of this company's large output of oil.

GRACE & COMPANY'S NEW STEAMER S.S. "COLUSA"

The S. S. "Colusa," owned and operated by W. R. Grace & Company, is expected to arrive in San Francisco on the morning of June 13th and will sail for Victoria on the afternoon of the 20th. The run to Victoria will be made in practically fifty hours. After discharging at Victoria the vessel will proceed to Van-couver. The S. S. "Colusa" will carry passengers from San Francisco to both these ports. At Victoria and Vancouver the steamer will discharge Salina Cruz cargo which was transferred from the Tehuantepec National Railway.

On completion of discharge at Vancouver the steamer will proceed to Seattle to discharge European cargo and to Tacoma and Du Pont to discharge nitrate of soda. The "Colusa" will then proceed to the Columbia River to load a full cargo of lumber and piling for the Isthmian Canal Commission on order secured under Circular No. 775 which opened in Washington on Saturday, May 17th. Grace & Company secured this order in competition with the Yellow Pine Mills of the Gulf States, their bid being the lowest.

The "Colusa" will proceed to San Francisco from Portland and is expected to sail on Saturday, July 12th for Panama. It is planned to run a round trip excursion to Panama. There will be enough stops at Panama to permit the passengers to inspect the Canal, also to visit other points of interest in the Republic of Panama. On the return North the "Colusa" will make day calls at Punta Arenas, C. R., San Jose de Guatemala, and Salina Cruz, Mexico, to afford interest to the passengers.

The dimensions of the new vessel are as follows: Length 424 ft

Danne	
Beam	55 ft.
Depth	. 29 ft. 2 in.
Length Forward Deck	102 ft.
Length After Deck	107 ft.
Capacity	8.000 tons.

cluding suites de luxe. The "Colusa" is four-mast type with double well decks, built on Isherwood system and equipped with the best gear that is available.

The "Colusa" will be operated between San Francisco and Puget Sound and the West Coast of South America as far south as Valparaiso. The S. S. "Colusa' is an oil burner with a steaming radius of 18,000 miles, which means that sufficient oil can be taken here to make any round trip which she may dispatch. The vessel is also equipped with Marconi wireless.

The S. S. "Colusa" flies the blue pennant of the Royal Naval Reserve. Captain E. J. Minister is a member of this organization and the steamer carries sufficient officers of the Royal Naval Reserve to permit her this privilege.

The Naval Appropriation Act for the fiscal year 1914 contains the following proviso for depots for coal and other fuel: "To complete the coaling plant at Pearl Harbor, Hawaii, \$306,250; heater coils in fuel oil tanks, \$43,500; additional fuel oil tank at Pearl Harbor, Hawaii, \$30,000; fuel oil tank at Boston, Mass., \$57,-700.

Steps have been taken to begin promptly, as soon as funds are available, the work in connection with increase in fuel stations above authorized.



A STEP FORWARD IN STEAMSHIP CONSTRUCTION

For many years there has been a decided need for a light weight, durable, serviceable and non-slippery deck covering. Necessity is the mother of invention, and that such a covering should eventually appear was

This need has been supplied by Arrowlock Elastic Tiling, which possesses characteristics adapted to the requirements of steamships, yachts, railway cars and vehicles generally.

The material is a composition containing a large percentage of pure cork. It is made in Arrowlock (interlocking), and conventional tile designs in various units and colors. It possesses great artistic possibilities and presents an unlimited scope to the designer. It combines the decorative features of marble and mosaic with the soft silent non-slippery qualities of cork. It is permanently elastic, sanitary, quiet, nonabsorbent, non-slippery and so durable as to last a lifetime without repairs.

SOCIAL HALL OF S. S. "SAN RAMON," SHOWING FLOOR COVERING OF ARROWLOCK ELASTIC TILING.—Photo by Miller & Smythe.

SEATTLE CONSTRUCTION AND DRY DOCK COM-PANY A BUSY PLANT

The steel single-screw twenty-knot steamer, "Tacoma," which was recently launched, is now receiving the finishing touches and will be turned over to the owners within a few days. The two submarine torpedo boats being built for the Chilean Government are almost ready for launching and work is underway on two submarine torpedo boats for the U.S. Government. Rapid progress is being made on the steel seagoing suction dredge, "Col. P. S. Michie," which vessel is 242 ft. long, twin screw, and is being built for the U. S. Government to operate at Coos Bay, Oregon. A steel single screw cargo boat for Sound use is under construction and will probably be launched early in June. This company is also building a steel tugboat, 117 feet, 6 in. long, single screw, which is to be delivered in probably three months. The steel sea-going, twin-screw cruising yacht, 230 ft. long, for Montana owners, is rapidly nearing completion and will be delivered in probably two or three months.

In addition to the above, a large repair job was recently completed on the S. S. "Robert Dollar," which included the installation of new stern post, stern frame and rudder. This contract amounted to approximately \$60,000.00. A new Mosher Water Tube boiler is being installed in the Sound Steamer, "Monticello."

It lends itself especially to marine construction in which every ounce of superflous weight of superstructure detracts from stability and seaworthy qualities. This tiling weighs but a fraction over a pound to the square It is one-quarter inch thick, can be laid on any smooth backing and is applied with a special water-proof liquid cement which not only serves to hold the tile permanently in place but also thoroughly water-proofs the backing on which the tile is laid. It cannot be regarded as a floor covering, but rather as a permanent integral part of the vessel or vehicle to which it is applied.

Marine architects and vessel owners will find it possible by means of this material to provide more liberally for cabin floors and deck covering

than those now in use which weigh nearly four times as much and cost in proportion.

ARROWLOCK Elastic Tiling is manufactured by DAVID E. KENNEDY, INC., Sharon Building, San Francisco, California. Their advertisement appears in this issue and they will be glad to supply full information and samples upon request.

SAVING FUEL BY USE OF RETARDERS ON OCEAN VESSELS

The shipping world is much interested in the experimental use of "retarders" in the draft of heating tubes of boilers on the Nord-deutscher Lloyd liners. The last two ships which called at Southampton-"Kaiser Wilhelm II" and the "Kronprinz Wilhelm"reported saving 10 per cent thereby, or sixty tons per day, while maintaining the required speed. The "retarders" are simply twisted steel flats, resembling oldfashioned stem pipe wipers, and are taken out for cleaning at the end of each voyage. The fuel saving of these two vessels enables them to discontinue taking on additional fuel at Southampton and also saves them about \$400 in port and pilot charges.

ACHIEVEMENTS AND PROSPECTIVE ADVANCEMENT IN SHIP CONSTRUCTION

By JOS. R. OLDHAM, N. A. M. E.

If the Ark, which constituted the perfect example of proportional dimensions of ships for all time, and which was of the same absolute general dimensions as one of our most efficient battleships-the "Delaware"-had not been so scientifically described in the book Genesis, the "Great Britain" would not have been laid down sixty-five years ago by I. K. Brunel; and if that most successful of iron steamships, which had a length and breadth corresponding with our excellent Cruiser "San Francisco," had not been constructed during that decade, the celebrated "Great Eastern," a creation of the same brilliant and brave spirit, would probably not have been built during the nineteenth century. In the absence of such perfect precept and example, the one thousand foot steamship would still have been a visionary speculation or an imaginary fabrication, for future decades to develop, instead of being a concrete structure within measurable time of completion.

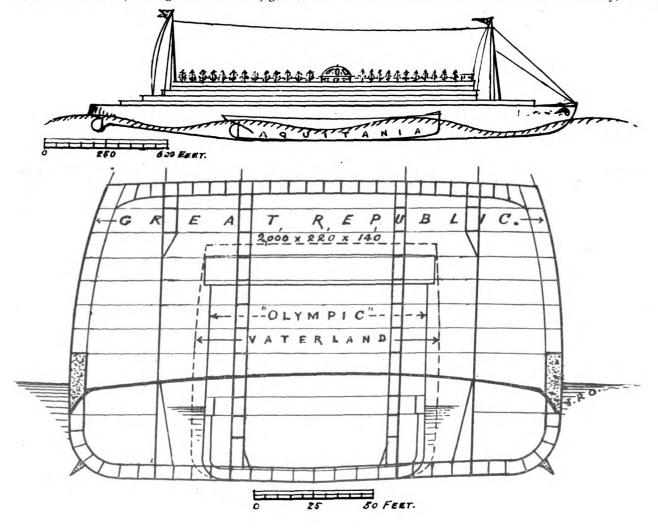
But so it is, and ever has been, that projects sown in one age are reaped in another; a multitude of agencies, however, being necessary to the final effect, of which the most important is time. But these greatest of vessels, the "Vaterland" and sister ships, the product of that wonderfully prolific and strenuous modern Germany, seems to have matured almost in defiance of time. This causes wonder as to the limits of the gigantic structures which may yet be seen floating over the oceans, through the ambition, genius and

courage of shipbuilders and marine engineers, even of the present generation.

Since the White Star steamer, the first "Britannic," with a length of 455 feet, was built in the year 1874, the lengths of steamships have been more than doubled. This corresponds to an annual advancement of two and one-half percentum. At this rate of progression a ship, probably other than a steamship, of about two thousand feet in length will be built by A. D. 1953.

When considering the possibility of such a structure it is pertinent to ask: Is there, then, no limit to the dimensions of the ship of the future? To which query I may reply: If the lengths and physical properties of deep sea waves augmented proportionally to the increase in dimensions of ships, the limit of safety would have been passed before now. But as that is not so, it is quite beyond my comprehension, and I surveyed the first Britannic for classification over forty years ago, to place a limit to the dimensions of the ship of the future.

When a vessel passes out of still water and encounters waves at sea, the strains to which she is subjected must be infinitely more severe than those due to still water stresses, independently of the stresses due to the velocity of the waves, which frequently move with a speed exceeding thirty knots an hour. In considering a ship as a loaded beam or girder, the hull is assumed to be poised for an instant on the crest of a wave at mid length, or conversely, on the





Domain,

crests of two waves, one at the bow and one at the stern, having a length from crest to crest, or from trough to trough, equal to the hull. And the height from trough to crest, instead of being "mountains high," as poetically expressed, is commonly computed as equal to one-twentieth of the length of the wave. On this hypothesis it has been demonstrated that while a vessel of one hundred feet in length is subjected to a maximum tension of a little less than two and onehalf tons at the gunwale, a vessel of the same class four hundred feet in length may have a maximum tension on the upper works of fully eight and threequarter tons. This increase, due to augmented dimensions, would soon place a limit to the length of a floating vessel if she were liable to be poised on the crest of only one wave of great height. But with such lengths as that of the "Aquitania" or the new "Britannic," the hull under the most trying conditions will always have the support of two wave crests or of one crest and of two half waves.

Dr. William Scoresby, who has carefully investigated the dimensions of waves, made a report to the British Association for the Advancement of Science. which report was recently endorsed by the late Sir William White. The greatest distance from crest to crest observed by Dr. Scoresby was 640 feet, and the period, or interval of time, between the greatest waves was 16 seconds, or about 30 knots an hour. The height from the bottom of the hollow to the top of the crest was 42 feet.

A great number of observations embracing the length, height and period of ocean waves were also taken by officers of the United States Navy. The greatest wave observed by them having a length of 500 feet and the greatest height 34 feet. Sir William White quotes Dr. Scoresby as having observed a wave of 790 feet in length from crest to crest, but as Scoresby's report, from which I quote, gives a maximum length of only 640 feet, I am inclined to think that Sir William has been misquoted.

Now, if we assume a length of 640 feet, the 2,000foot ship would never be without three wave crests to support her at any instant, and with a maximum wave height of 42 feet, the great ship should ride the waves very gently.

Mr. Fairbairn assumed that ships, whether afloat or ashore, are governed by the same laws of strain as simple-built beams or girders. Accepting this hypothesis, I may also predicate that such a ship as I illustrate is feasible, by comparison with the Forth bridge. The main spans of that great structure exceed 1,700 feet in length, the weight of steel used exceeds 40,000 gross tons, and that bridge stands as firm as a rock after one-quarter of a century's service.

The length of the ship, I illustrate, it is true, is 300 feet greater than that of the bridge; but in the case of such a vessel floating on the ocean—the ocean, which after all is a gentle creature, at least in comparison with the rocks-after certain dimensions are reached the supporting element becomes more favorably distributed over the length of the hull. This, of course, on the hypothesis, which I assume as a verity, that the physical properties of deep sea waves have not degenerated since Dr. Scoresby's time. Then it may be seen by the outline profile of the two thousand foot ship, that even when exposed to the most violent storm, she will never be without the suport of three wave crests, whereas the bridge has no support between its abutmens or piers.

It has been stated that the maximum stress in the Mauretania cannot exceed ten tons per square inch on her upper works. This, of course, even as a maximum is high, and I am inclined to think that my friend, Mr. G. B. Hunter, has over estimated the bending moment. Be that as it may, however, in this great example of mine the maximum tension on the upper works should never exceed eight tons per square inch, and special construction is provided to resist compressive forces in the deck plating.

In this floating island, carrying over twenty thousand souls, and having a length of 2,000 feet, breadth of 220 feet, and a depth of 140 feet, loss of life through stress of weather will be unknown. With a double shell, four cellular longitudinal, and twenty-two complete transverse bulkheads, dividing the hull into sixtyfour main watertight compartments, not enumerating the numerous compartments formed by water-tight decks, the number of which will be eighteen, exclusive of the heavy protective deck, having all openings therein strongly enclosed by trunkways extending up to the strength deck; the vessel will be absolutely un-The speed need not be high for several reasons, probably as a purely passenger and mail boat, twenty-one knots an hour will suffice. This can be attained with 300,000 horse power actuating five screw shafts, with turbine engines sitted with reduction gearing between the turbines and propellers, so that the turbine and screws will each revolve at such a speed of revolution as may secure for each their maximum efficiency. The motive power will be developed by gas turbines, or other form of internal combustion engines; and as there are no great smoke stacks above the decks I have shown a park or roof garden, covering about six acres of deck area. The pine trees shown may be of cast metal to form a screen above the bulwarks to protect the flowers and shrubbery.

Passengers could be transported across the ocean while residing on this ship almost as economically as they could live on dry land, and as each of the decks will have an area of about eight acres, in addition to the deck laid out as a public park, another deck could be assigned to the "four hundred," as the modern tendency is for luxury to abound; for simplicity to vanish; and as there will be swimming pools, theatres, and all of the popular entertainments of shore life, in addition to public restaurants and all kinds of stores, the pasage across the ocean will not be tedious even though prolonged a day beyond the normal time of the fastest steamers.

The mechanical problem involved in such a structure as I have outlined, though utilizing three times the weight of steel required for the construction of the Forth bridge, will not be the limiting factor to this advance. The dominating problem will doubtless be a financial one, unless, copying the precedent inaugurated in the British Government and Cunard combination, the United States executive could be induced to build such a vessel and charter her to a ship-owner at a rate sufficient to cover the interest on first cost, insurance, and depreciation; as our financiers would probably place a ban on the investment of \$50,000,000 in one floating unit. To our Government, however, such a ship would form a most valuable asset, to be operated by them only in time of war, as a troop ship or auxiliary cruiser. As such, however, it would be advisable to augment the horse power by about fifty percentum to enable her to keep well ahead of speedy foreign cruisers.

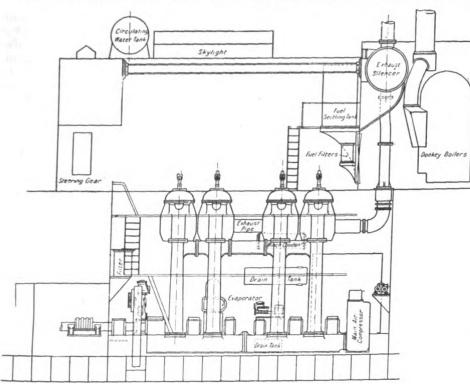
THE DIESEL ENGINE

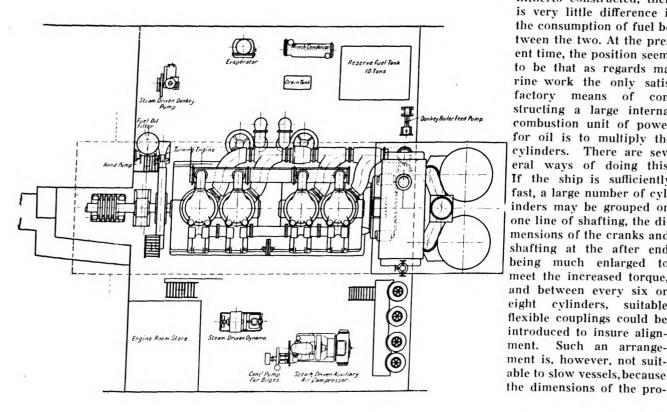
Its Application to Marine Propulsion and Method of Operating

The application of the Diesel engine to large vessels, such as the "Selandia," the recently-built "Eavestone," etc., Dr. Diesel's enthusiastic advocacy of heavy oils, and Sir Marcus Samuel's statements as to the amounts and probable price of such oils, have tended to distort in the public mind the true relationship of coal

and oil fuels, and it is accordingly desirable to discuss the question briefly. The internal combustion engine has been in use for over thirty years, during the early period in the form of the comparatively slow-running gas engine for land use. Then the perfecting of electrical ignition, the introduction of petrol, and the demand for a light engine brought into use the modern petrol engine. Concurrently, the engine for burning heavier oils has been introduced, wherein the oil is gasified by being injected into a hot-pot, initially

ENGINE ROOM OF THE EAVESTONE-ELEVATION AND PLAN tion with the cylinder end. In all these engines the





heated and in communicacompression is comparatively low. In the Diesel engine, which can burn still heavier oils and in which the compression is much higher, the heat produced by compression is sufficient both to gasify and ignite the injected fuel. For comparatively small powers, as viewed by the marine engineer, internal combustion engines have proved eminently satisfactory, and the economy of fuel for such sizes is very much superior to that of steam engines; chiefly for this reason, they have almost entirely superceded the latter for small powers. On the other hand, as the size increases their relative superiority diminishes, until in the case of the largest steam units, as compared with the largest internal combustion units hitherto constructed, there is very little difference in the consumption of fuel between the two. At the present time, the position seems to be that as regards marine work the only satisfactory means of constructing a large internal combustion unit of power for oil is to multiply the cylinders. There are several ways of doing this. If the ship is sufficiently fast, a large number of cylinders may be grouped on one line of shafting, the dimensions of the cranks and shafting at the after end being much enlarged to meet the increased torque, and between every six or eight cylinders, suitable flexible couplings could be introduced to insure align-Such an arrangement is, however, not suitable to slow vessels, because

https://hdl.handle.net/2027/nyp.33433019064298 http://www.hathitrust.org/access use#pd-googl peller to absorb the large power necessitate a too slow rate of revolution for the engine. Possibly a number of propellers with their separate shafting, which would suit the engineer as a solution, would not be favored by the naval architect. Another and preferable method which naturally suggests itself is the use of gearing by which a number of multiple cylinder internal combustion engines may be grouped on to and drive pinions, each gearing into a large wheel to drive the screw, and there may be several large wheels on each line of shafting. In such an arrangement, each engine would have its flywheel, and a spring drive with torsional damping, might be interposed between it and its pinion, to reduce the irregularity of torque. Any of these solutions appear at first sight complex, involving a very great multiplicity of working parts, which, however, should not be assumed as an insuperable objection. For instance, the large number of blades in a turbine was once held as a serious objection, but experience has shown that this is not the case, and with a multiplicity of internal combustion engines there undoubtedly follows increased safety from serious or total breakdown, provided that suitable means have been introduced for disconnecting any damaged unit, and also for preventing, in case of such failure, any damage to the rest of the system.

At a discussion last summer in relation to cargo vessels generally a lower price for oil than 50 shillings seemed to be needed to enable it to compete as fuel in internal combustion engines, with coal burnt under boilers of modern steam engines and geared turbines. There are, however, exceptional cases of vessels that have to perform very long voyages carrying their own fuel where the advantages of a minimum consumption are paramount. On the other hand, there are cases which are much less favorable to oil; the short experience so far obtained of large oil engines on board ship (while eminently satisfactory and encouraging to builders and owners), makes speculation difficult as yet, and it remains for further practical experience over a term of years before definite and accurate figures can be available as to absolute reliability and the cost of operation and upkeep.

It will no doubt be of interest to our engineering subscribers and readers who may not be familiar with the method of operating and controlling the Diesel engine to briefly describe the operations, so as to enable this to be understood: The cams for operating the scavenging valves are of symmetrical form and can be set to the correct position for ahead or astern running by altering the angular relationship of the cam and crank-shafts. The partial rotation of the camshaft required to bring this about is effected by raising or lowering the vertical driving-shaft, which, by engagement of the spiral gear wheels, causes the camshaft to revolve through the desired angle, the crankshaft of course remaining stationary. The movement of the vertical shaft is produced by a servo-motor operating through a rack and pinion and connecting rod coupled to a lever embracing a sleeve on the vertical shaft, the whole arrangement being such that in extreme position the gear is practically self-locking. The piston of the servo-motor is operated by compressed air, and smoothness of action is insured by the addition of an oil-brake cylinder. The cams for the fuel injection and air starting valves of each cylinder are in duplicate, there being one set for ahead and one set for astern running. By means of a special auxiliary or maneuvering shaft parallel with and adjacent to the

cam-shaft, the rollers of the valve levers are brought into contact with the appropriate cams in the following manner (assuming the engine is about to be started in the astern direction after having been running ahead): In the "stop" position of the maneuvering gear the rollers are all clear of the cams. Thus the maneuvering shaft is free to slide axially in order to bring the rollers opposite the astern cams. This longitudinal movement is affected by the servo-motor at the same time as the cam-shaft is rotated. The maneu vering shaft is then rotated by means of a geared hand wheel, thereby causing the rollers to be brought into contact with the cams. The details of the mechanism cannot adequately be described without detail drawings, but it may be said that by the interposition of specially-shaped auxiliary cams on the maneuvering shaft the air starting valves on all cylinders are first brought into action, and then gradually cut out, and the fuel injection valves switched in, all this being effected by turning a hand-wheel at the starting platform. This same maneuvering shaft brings the measuring pumps into action at the appropriate time, and finally when the engine is set to "full speed" position cuts off the air supply to the starting valves through a regulating valve on the main, thus preventing any possible leakage. The larger and lowest of the two vertical hand-wheels is the hand reversing gear, which takes the place of the servo-motor, should this be out of order. Below this wheel is the air cylinders of the servo-motor, while above it is the maneuvering handwheel. The vertical hand-lever carried on the maneuvering-wheel bracket operates a cock admitting air to the servo-motor. By the manipulation of this lever and hand-wheel the engine can be started, stopped and reversed at pleasure. There is a small hand-wheel in an inclined position above the manuvering-wheel which sets the governor for the desired speed of engine, while the quadrant and lever immediately underneath provides an independent hand adjustment of the measuring pumps. All the essential controls are interlocked, so that it is impossible to operate them in any but the correct sequence when stopping and reversing. It will therefore be seen by the technical reader and engineer that far from the Diesel engine being "a box of tricks," simplicity itself is adhered to, and all complications have been avoided; to the marine engineer the operation and handling of these engines with confidence will come naturally, as in actual practice the Diesel engine can be reversed from full speed ahead and actually running astern in from 9 to 10 seconds, and this without any haste, but with the utmost deliberation.

TWO OCEANS NOW JOINED AT CULEBRA

The first through cut of the Panama Canal from East to West was completed May 24, when two steam shovels working from the opposite met at Culebra.

With the meeting of these great steam shovels, the canal was opened at grade from ocean to ocean.

Hundreds of workmen quit work and cheered when the big shovels scooped out the last bit of earth that joined the two oceans. There is still to be excavated in broadening the canal about 8,000,000 cubic yards of earth.

President Woodrow Wilson is to visit Alaska before the end of his term. The President assured Major J. F. A. Strong, successor to Governor Walter E. Clark, who resigned several months ago, that he would make the trip as soon as official business would permit.

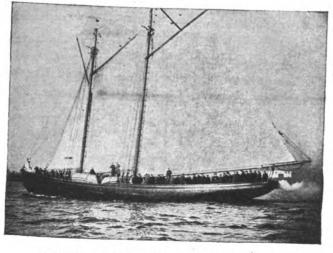


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FISHING SCHOONER "KNICKERBOCKER"

The first of two powerful auxiliary fishing schooners built at the yards of Arthur D. Story, Essex and Glouchester. Mass., for use on the Pacific Coast, left T Wharf, Boston, March 24, on her long run of 16,000 nautical miles to Puget Sound. The "Knickerbocker," which is to be followed in about a month by her sister schooner, "Bay State," was at sea more than three months before reaching her destination. A good part of the trip was made under sail, the engines being used only to offset calms, storms, or the treacherous passages negotiated around the south end of South America. Both boats have been built for the New England Fish Company to be used from Vancouver and Seattle in the halibut fisheries.

The sail plan of these boats shows an abbreviated area as compared with the old familiar type of fishing schooner. There is no top mast and the bowsprit has been omitted. This reduces both the height and the length of the sail area and leaves simply four fore and aft sails—jib, staysail, foresail and mainsail. There is in addition a square sail on the foremast to be used when running before the wind. To offset this decrease in sail area each vessel is equipped with twin screws operated by 100 h. p. Blanchard marine oil engines, built by the Blanchard Machine Company, Cambridge, Mass. These engines are designed for



FISHING SCHOONER "KNICKERBOCKER."

using fuel oil which can be obtained on the Pacific Coast at about \$1 per barrel, and it is estimated that the difference in cost when operating full power with the engines would be about \$50 per day in favor of fuel oil as compared with gasoline.

The most interesting feature of the new vessel is the power plant. Each of the two four-cylinder engines weighs about 8,000 pounds. The cylinders have a diameter of ten inches with a stroke of ten inches, and under full power the engine runs at 320 r. p. m. Each engine is 11 ft. 4 ins. long and 30½ ins. wide, a very small space for the power. The height of engine above shaft is 44 ins. only, while the depth from the center of shaft to bottom of crank case is 11½ ins., thus making the total height of engine well under five feet. The propeller shafting is 3 ins. in diameter, each shaft carrying one three-bladed feathering wheel 44 ins. in diameter and with a pitch of 46 ins.

The fuel oil carried on the long trip around The Horn was 7,000 gallons. This would be sufficient for about twelve days' continuous steaming at full power.

It is proposed, however, to run the engines only when needed, as explained above, and also to run them about half an hour every day or two in order to be sure they are continually ready for use and not bound by rust or anything of that sort.

The vessels, as stated in our previous article, are of 155 tons each. The length over-all is 125 ft., with a water line length of 102 ft. The water line beam is 24½ ft., while the mean draft is 10 ft.

The "Knickerbocker" made a speed of ten knots an hour on her trial trip.

A MOTOR-PROPELLED LIGHTSHIP

The German lighthouse service, early in 1912, completed for a station at the mouth of the River Elbe a steel light vessel possessing certain unique characteristics. The vessel is 173 feet over all, 1371/2 feet water-line, 251/4 feet beam, and has a displacement of 720 tons on a draft of 12½ feet. It is propelled by an internal-combustion motor consisting of a reversible four-cylinder, two-cycle Diesel type engine of 220brake horsepower at 280 revolutions per minute. When running at full power the vessel develops a speed of nine knots. Two auxiliary internal-combustion engines operate the air compressors for the fog signal and supply air pressure for the operation of a windlass and a general-service donkey pump. Dynamos for the generation of the current for the signal light are also operated by these internal-combustion engines. Storage batteries are fitted for the purpose of illumination in possible cases of breakdown of dynamos. The dynamos and fog-signal apparatus are in duplicate.

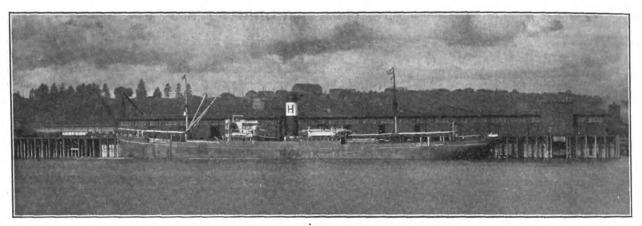
The vessel is fitted with a fore and main mast and a tubular lantern mast amidships. The hull is constructed with a short topgallant forecastle and continuous upper deck, upon which two deck houses are erected, one containing the pilot house and galley and the other the fog-signal apparatus. The main deck forward is fitted for the crew's quarters, and at approximately the middle of the length of the vessel with staterooms and messroom for the officers, and a wireless operating room. Aft of the machinery space, which extends to the upper deck through the length of the compartment, are quarters for the engineers. The fore hold is arranged as a storeroom for provisions and ship's stores, and the entire remainder of the vessel is given over to fresh water and fuel tanks and the engineroom proper.

The light shows a flash of 8 seconds' duration every 20 seconds, of about 36,000 candlepower, and its focal plane is approximately 52 feet above water. The signal light is a flaming arc of decidedly yellowish tone, and the flashes are obtained by a revolving opaque shutter. The illuminating apparatus is a specially constructed Fresnel lens, and is suspended as a compound pendulum to minimize the effect of the rolling and pitching of the vessel.

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ROYAL MAIL STEAM PACKET "HARPAGUS"

The Royal Mail Steam Packet Company inaugurated its trans-Pacific service with the sailing of the S. S. "Harpagus" from Portland, Oregon, on May 10 last, thereby establishing its continuous around-theworld line. This company has chartered special steamers for the new service pending the completion of a fleet of splendid 12,000-ton passenger and cargo steamers in course of construction. The new line will connect in the Orient with the Glen & Shire Line of steamers, now owned by the Royal Mail and in service from Europe to the Orient. The S. S. "Harpagus," a steel screw steamer of 5,866 tons gross, carried the largest cargo which had ever left Portland for the Orient. The S. S. "Flintshire" of the Shire Line will follow the "Harpagus," maintaining the anticipated four-weekly service of the company from Portland to the Far East.

LAUNCHING OF A DIESEL MOTOR-DRIVEN OIL-TANK VESSEL

The "Sebastian," stated to be the first Diesel motor-driven oil-tank vessel to be built in the United Kingdom, was recently launched at Dundee. It is a twin-screw motor vessel, fitted with long poop bridge and forecastle; length over all, 321 feet; breadth (molded), 45 feet; depth (molded), 36 feet 3 inches; gross tonnage, about 3,400. It has been designed for the carriage of oil in bulk, and is divided into twentyeight oil-tight compartments by longitudinal and transverse bulkheads. The vessel is fully equipped with deck machinery. A complete equipment of steamingout and vapor pipes has been fitted to all oil compartments for clearing the tanks of gas after the discharge of cargoes. Provision is also made for discharge of case oil, if necessary. The propelling machinery consists of two sets of Diesel oil engines. Two donkey boilers are fitted for supplying steam to the auxiliary and deck machinery (one of these boilers being constructed to burn oil fuel), and also four sets of powerful pumps, which are fitted in two pump rooms amidships, for the rapid discharge of the oil cargo.

EXTENSION OF CRUDE OIL CONTRACT

The present contract with the Union Oil Company of California for supplying the crude oil used by the Canal Commission and Panama railroad expires on March 31 of this year, and on March 4, the Secretary of War approved the extension of the existing agreement until June 30, 1914, in effect, without change. The Union Oil Company has been supplying its product to the Commission since August, 1907, although it was not until November 14, 1907, that its pipe line across the Isthmus was in complete operation. The revocable license granted it on January 10, 1906, was superceeded on April 1, 1909, by a contract for one year, extendible for three years, or until April 1, 1913. Under the former license the company delivered oil on the Isthmus at the rate of 90 cents a barrel; under the succeeding agreement, the price was advanced 20

cents a barrel, which price still obtains. The maximum amount of oil that can be purchased in any one month at the present time is 100,000 barrels. The annual consumption has steadily increased.

The S. S. "Flintshire," of the Royal Mail Steam Packet Company, left Yokohama on May 3 for Seattle and Vancouver, B. C., where she arrived on May 27.

SHIPPING AND **LUMBER**

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Wholesale Pine Lumber Cedar Poles and Piles

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M. S. Dollar (4,216 tons)...3,250,000 ft. Stanley Dollar (1,838 tons) .1,500,000 ft.

Melville Dollar (1,244 tons) 1,200,000 ft. Grace Dollar (809 tons) ... 1,100,000 ft.

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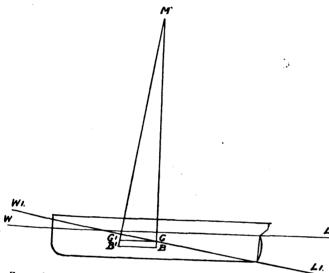
PRACTICAL DUTIES OF SHIP MASTERS

(Continued.)

Longitudinal Metacentre. In Fig. 1, at some distance above the hull of the vessel, there is a point marked M; this is an imaginary point upon which a vessel may be said to oscillate were she free, and is known as the Longitudinal metacentre. The metacentre is always in the same vertical line as the center of buoyancy and the centre of gravity while stationary.

In short, vessels of deep draft the longitudinal metacentre will be at a height less, and in vessels of a great length and light draft greater, than the length. This is easily verified in each individual vessel.

In modern cargo vessels the height of the longitudinal metacentre above the centre of gravity is about equal to the length, and the following calculations have been made upon this hypothesis; but should greater accuracy be demanded it will be necessary to find the true metacentric height for each displacement.

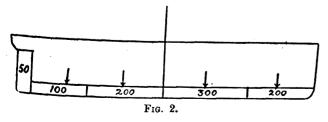


Zero from which to measure distances. When taking the "Distance" for the formula, the difference of draft will be the correction, either plus or minus, to be applied to the distance as taken from the centre of the vessel, i. e., the centre of gravity when the vessel is on an even keel.

Should the vessel be six feet by the stern the centre of gravity will be six feet aft of the centre of the ship. If the weight to be dealt with is at the fore end of the vessel, this difference of draft, added to the distance between the centre of the vessel and the new centre of gravity, will be the true distance required.

This formula will be found particularly useful when taking in a quantity of dead-weight cargo and filling up with light cargo, so that the vessel, when full, will be down to her marks.

The writer has found it particularly useful when on a long passage to find when the vessel has come to an even keel, and what effect certain tanks will have upon her trim.



The action of filling or emptying a ballast-tank can be accurately foretold, also the draft of a vessel at the termination of a long voyage after burning large quantities of bunker coals.

			- 1			
0000444# 00	•	"		, ,,	1	"
$200 \times (47 - 3)$			Diff.3' 2		2	0
(3)=		9.7	Rise -	- 5		5
10,800			-			
Corr.	0	$4 \cdot 9$	_	-	23	7
			Corr	- 4 ⋅9	-	4.9
$200 \times (154 \pm 2)$			Diff.2' 2	0 11.9	$\frac{-}{23}$	2.1
(1)——=	2)2	11.3	Rise -			5
10,600			-			
Corr.	1	$5 \cdot 6$	20	6.9	22	9 · 1
			Corr. – <u>1</u>	5.6	+1	5.6
$50 \times (190 - 5)$			Diff.5' 19	1.3	24	2.7
(5)———=	2)0	$10 \cdot 4$		1.2		1 2
10,550					-	
Corr.		$5 \cdot 2$	19	0.1	24	1.5
			Corr. +	${f 5}\cdot{f 2}$	_	
$100 \times (134 - 4)$			Diff.4' 19	5.3	99	8.3
(4) ====================================	?) 1	$2 \cdot 9$	Rise -			2.5
10,450					_	2·J
Corr.	0	$7 \cdot 4$	19	2.8	23	5.8
			Corr. +	7.4	_	7.4
2005/ / 50 + 0						
$(2) \frac{300 \times (53+3)}{2} = 2$			Diff.3' 19		22	10.4
10,150 -) [7.8	Rise -	7 ⋅5	_	$7 \cdot 5$
Corr.	0	9.9	10	0.7		
dor	U	J . J		$2 \cdot 7$	22	
			Corr	9.9	+	9 · 9
		New	Draft 18	4.8	23	0.8
•			:	-		

How, to find the Longitundinal Metacentre. Note the vessel's draft very carefully fore and aft (when in very smooth water, such as a dock), to the nearest quarter of an inch if possible; add a known weight to one end of the vessel; compute her inclination of keel by the addition of the weight as shown in the preceding formula, upon the hypothesis that the metacentre is the same height above the centre of the vessel as the length of the vessel; then again carefully take her draft; a simple proportional sum will give the true metacentric height at that displacement.

Where OI=Observed inclination of keel.

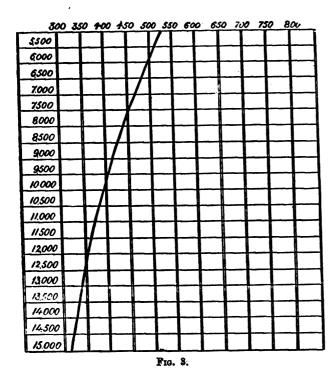
- " CI=Computed inclination.
- " LV=Length of vessel.
- " M=Metacentric height.

OI:CI::LV:M.

An excellent way to add the weight is to fill the aft peak tank with water through a tested meter; it can be very cheaply done at all our home ports. The tank once filled through a meter has its capacity more accurately defined than that usually given in the plans supplied by many of the shipbuilders, and the weight is easily manipulated. Having once tested the capacity of the tank, a record can be made and retained on board for future trials at other displacements.

The metacentric height varies with the displacement of the vessel; therefore the metacentric height should be found when the vessel is light, half loaded, and fully loaded, or nearly so. Should any great dif-





ference of metacentric height be observed when light, half loaded, or fully loaded, a curve can be constructed as shown in Fig. 3.

The correct metacentric height having been taken from the preceding diagram corresponding to the actual displacement of the vessel, proceed as follows: .

Corr. M. (from diagram) : Approx. M : : G : Corr. G.

Unless great accuracy is demanded, or there is a great discrepancy between the correct and approximate metacentres, it is hardly necessary to take this correction into consideration; but it is advisable to find the above-mentioned correction, as it may be large in some types of vessels.

Formulæ for finding the variation of metacentric height due to change of trim. The variation of meta-

centric height due to change of trim is always of such small dimensions that it can be safely neglected, but as most seamen insist upon great accuracy in their work it is as follows:

$$\sqrt{\text{Dist. M. G}^2 + \text{Dist. G Gi}^2} =$$

New metacentric height.

Vide Euclid, Book 1, Prop. 47.

For coefficient of fineness. The block coefficient of fineness is the decimal fraction of the displacement of the vessel as compared with that of a block having the same dimensions as those of the ship.

Block Coefficient of Fineness =

Displacement \times 35

Length \times Breadth \times Depth.

SEVEN-REVIEW shrdlu shrdlubonningtoin Indicated horsepower necessary to drive a ship at a given speed.

S=Speed required.

L=Length.

12=Constant.

D=Displacement.

S D I.H.P. = ---12 L

Length × Depth × Breadth

Displacement = -

To find the Wetted Surface (Denny's Rule).

L=Length.

D=Depth.

1.7=Constant.

C=Block Coefficient.

B=Breadth.

 $(L \times D \times 1.7) + (L \times B \times C) =$

Square feet of Wetted Surface.

To find the indicated horsepower using the welled surface (Denny's Rule).

Experience has taught that every 100 feet of wetted surface require 5 I.H.P. for a speed of ten knots; if additional speed is required then

103: (Speed Req.)3:: I.H.P. at 10 knots:

I.H.P. to give Req. Speed*

*This formula applies to any particular type of vessel within ordinary speed limits.

FREIGHTS AND FIXTURES

Messrs. Page Brothers, Ship and Commission Brokers of 310 California street, San Francisco, who compile each month a special freight report for the PACIFIC MARINE REVIEW, send us the following, dated June 2, 1913:

The first part of May showed very little activity in freights, but towards the end of the month with a lack of orders in the market combined with the information, suddenly reported, that the United States Government had chartered from ten to twenty steamers to carry coal from the Atlantic Coast to the Pacific, steamers obliged to charter found that rates had simply slipped away, as cited by the following:

Str. "Strathtay" to load on the 1st of June by Balfour, Guthrie & Co., 42/6 net per 1,000 feet from Puget Sound to Port Pirie, Australia.

Str. "Artemis" to load on the 25th of May, full cargo of cotton, from San Francisco to Yokohama and Kobe, Japan, at \$8.00 per ton weight.

Str. "Terrier" to load about the 1st of September, lumber from this Coast to Australia, at 37/6 Sydney, 38/9 Melbourne and 43/ to Port Pirie and Adelaide. These rates are free of commissions.

Str. "Aymeric," chartered by Davies & Fehon at 6/ on the dead weight, delivery at Newcastle, redelivery at Newcastle/Port Pirie Range, one round voyage to

Str. "Hornelen,' about end of June loading, chartered by Davies & Fehon at 5/9 on the dead weight, delivery on this Coast, redelivery at Sydney or Newcastle, Aus

Str. "Oceano," also chartered by Davies & Fehon, delivery on this Coast about the middle of June at 5/6 on the dead weight, redelivery at Sydney or Newcastle, Australia.

Str. "Cape Finisterre," chartered by Davies & Fehon at 5/9 on dead weight, delivery and redelivery Australia, one round trip to this Coast.

Str. "Queen Maud," chartered by the American Trading Company for a similar voyage at 6/ on the dead weight.

Str. "Manchester Citizen," chartered by Balfour, Guthrie & Co., June/July loading from Portland to Calcutta, India, at 50/ per 1,000 feet, with the option 53/ to Bombay.



Str. "Harpalyce," chartered by the Royal Mail Steam Packet Co. at 7/6 on the dead weight, for one trip over to China from Portland.

Str. "Wyneric," by A. F. Thane & Co., lumber from Puget Sound or Columbia River to two ports in Africa at 85/ per 1,000 feet, with option of three ports at 86/3.

Str. "Herakles," chartered by Price & Pierce of London, at 75/ per 1,000 feet. Lumber from Puget Sound or Columbia River to Buenos Ayres.

Str. "Thode Fagelund," chartered to bring a cargo of gas coal from Japan to Vancouver, B. C., at \$2.50 per short ton.

Str. "Foreric," chartered by J. & A. Brown, for a cargo of coal from Newcastle, Australia, to Nome, Alaska, at about 32/ per ton.

Str. "Christian Bors," chartered by J. J. Moore & Co., Inc., to bring a cargo of coal from Australia to Unalaska on private terms.

Messrs. Hind, Rolph & Co., of 310 California street, San Francisco, who have favored the Pacific Marine Review with their monthly freight report for years past, send us the following under date of May 31, 1913:

During the past month there has been a decided easing off in freights, and though there has not been a great volume of business transacted, what has been done has been on a decidedly lower basis. This applies more particularly to steam tonnage. Sailer freights are more or less maintained, but there is, nevertheless, a weaker tendency. We have to report the following fixtures:

Sailers

"Nokomis," lumber to Suva or Levuka, 60/.

"John A. Campbell," lumber to Suva or Levuka, 60/. "Columbia," lumber to a direct nitrate port, 60/.

Steamers

"Manchester Citizen," lumber to Calcutta, 50/; option to Bombay, 53/.

"Herakles," lumber to Buenos Ayres, 150/ per standard.

"Wyneric," lumber to three ports South Africa, 86/3. "Terrier," lumber to Sydney and Newcastle, 37/6; Melbourne, 38/9; Adelaide and Port Pirie, 43/.

"Kina," Portland/U. K. Cont. 31/3, wheat.

"Oceano," time charter; delivery Puget Sound; redelivery Newcastle/Pirie Range, 5/6.

"Harpalyce," time charter delivery Portland; redelivery China 7/6.

It is found that the grand total of inward and outward movements of merchandise and treasure by sea at San Francisco for 1912 reached the record-breaking figure of \$177,554,901. The previous high-water mark was \$162,002,726, in 1911.

The returns of the foreign trade of Japan for the first three months of this year show that the exports amounted to 138,318,000 yen and the imports to 189,717,000 yen, a total of 328,035,000 yen, the imports exceeding the exports by 51,399,000 yen.

ARTHUR H. PAGE New Orleans. JOHN H. JONES Mobile

PAGE & JONES SHIP BROKES AND STEAMSHIP AGENTS

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THE BUSINESS AND FINANCIAL OUTLOOK

General business in most parts of the United States continues fairly good. The volume is not as large in some sections as it was, and orders for future business are not as heavy as they were six weeks ago. But the indications are that the May figures will be better than those of that month in 1912, when the country was becoming seriously unsettled concerning the possible interference of the presidential campaign.

The crop prospects are excellent. This is the story of bankers everywhere, especially in localities where satisfactory crops are absolutely essential to any lasting good times. The expectation is that the harvest will be highly satisfactory, although it is recognized that the season is not yet far enough advanced to attempt very definite predictions as to what the final conditions will be in the wheat belt.

There is likely to be a good demand for money throughout the year. This is ascribed to expanding credit requirements, the desire of farmers to hold grain for higher prices, and the fact that interior banks are, because of other commitments, already pretty well loaned up. There is nothing dangerous in the situation; on the contrary, it is pointed out that the need for conservatism has been so generally recognized that borrowers everywhere have scaled down their applications in accordance with prevailing conditions in the money market.

The chief elements of uncertainty are thought to include the insistent demands of labor for increased pay; the radical tendency of new legislation; the growth of socialism, and the doubt as to the effects of the readjustment following the enactment of a new tariff bill. So far as the tariff is concerned, it is admitted that the reductions have been fully discounted in many cases.

The bankers are absolutely united respecting the need of currency reform. This demand has been emphasized in the replies again and again, and many term it the most vital problem before the country today.

It is emphasized that Congress should enact the new tariff law without delay and thus end the long period of suspense which business men have been subjected to ever since the problem of tariff revision became the most influential factor in the business situation. Almost all of the bankers refer to the fact that the country is today virtually free from speculation, and that such abuses as were witnessed a few years ago in financing the land craze and other long term ventures are no longer an element of weakness in the situation.

The consensus of opinion is that active times are ahead owing to the present uncertainties of tariff readjustment, the European situation, conditions in the bond market and uncertainty as to the final outcome of the crops. The suggestion is made by more than one banker that, in this country, conditions change quickly. The feeling is that with so large an international trade balance in our favor, and with the return to this country during the Balkan war excitement of perhaps one hundred million dollars of American securities, formerly held abroad, our money market has been in a measure fortified against serious disturbance in the autumn. This question, however, will be largely determined by the action taken with reference to the important financing which must be arranged for later in the year.

THE FOURTH NATIONAL BANK OF THE CITY OF NEW YORK, June 1, 1913.



PLANS FOR OAKLAND'S WATERFRONT

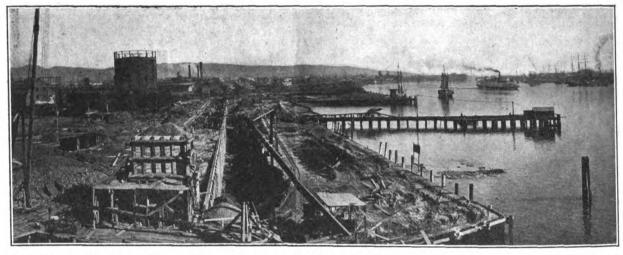
Oakland and the East Bay shore cities adjacent are working out plans that will, when completed, provide the longest continuous reach of waterfront equipped with piers, wharves, warehouses and facilities for handling freight and passengers on this Coast.

The present water-carried traffic and the increase that is to be reasonably expected justifies the undertaking. Much of this work has already been planned and completed, a beginning having been made in the estuary of San Antonio, or Oakland inner harbor. As the population and business increased on the east side of the bay, plans for waterfront improvement were evolved at several points along the shore from San Leandro to Richmond.

There is now a channel five hundred feet wide, with thirty feet depth of water at mean low tide, extending from the deep water of the bay up the estuary to the tidal basin, four and one-half miles, and a channel three hundred feet wide and twenty-five feet deep is being completed around the tidal basin.

The wharves along this estuary have been built by the Oakland municipal government and by firms and corporations holding franchises, leases or grants.

Along the estuary the municipal government has constructed, during the last two years, a concrete pier at the foot of Livingston street, with street approaches, at a cost of \$175,000, and a concrete quay wall extending from Clay street to Myrtle street, a distance of



SHOWING WORK ON OAKLAND'S ESTUARY QUAY WALL, JUST FINISHED, CHANNEL 500 FEET WIDE 30 FEET DEEP.

Although a great deal of work has been accomplished on these disconnected projects, it was thought best to complete the improvements of this entire coast line of approximately twenty miles as one undertaking.

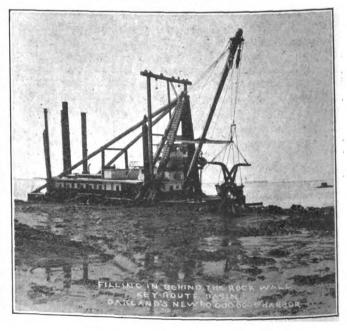
This idea has been worked out and presented by Lieut. Col. Thos. H. Rees, Corps of Engineers, U. S. A. The plan of Lieut. Col. Rees is one of the greatest in the line of harbor development that has ever been proposed in this country. The Rees plan is designed by the engineer to utilize the municipal retaining wall in the Key Route basin and make that a part of the general west front improvement.

The development of the Oakland waterfront has been carried on heretofore by the federal and municipal governments, by private corporations and firms in the estuary, by transportation corporations on the west front, and lately by the municipal government on that portion of the west front known as the Key Route basin.

The federal government work has been confined to deepening and maintaining channels and such construction as is essential to making and keeping open adequate channels approaching wharves built by the municipality, rail line transportation companies or other occupants of the waterfront.

The work on the estuary has entailed an expenditure by the federal government of about \$3,800,000. This has been spread over thirty years and has resulted in making the shallow estuary, where originally there was only two feet depth of water at low tide, one of the finest inland harbors and waterways on the Pacific Coast.

2,200 feet. This quay wall is declared by engineers to be one of the finest pieces of waterfront work on the West Coast. The municipal government has expended on this estuary improvement \$1,973,000. Plans for completion of the wharves in the district covered by the quay wall contemplate a further expenditure by the municipality of two to three hundred thousand dollars. This will fully equip the half-mile stretch and provide a fair way out to channel thirty feet



deep and one thousand feet wide. This will give space for the largest vessel afloat to turn and go out under its own power.

On the west front, in what is known as the Key Route basin, the Oakland municipal government has expended, during the past two years, \$530,000 in the construction of a retaining wall at bulkhead line, dredging in front of this wall, filling in behind the wall with the silt pumped from the seaward side, and in building open wharves along a portion of this retaining wall.

The completion of the scheme for waterfront improvement that the municipal government has adopted requires that wharves, warehouses, belt railroad, house tracks and movable cranes for handling freight be provided for both these section of waterfront. The deepening of the channel on the west waterfront will provide material for filling in the space back of the wall, by which means approximately four hundred acres of ground admirably adapted and advantageously located for factory and warehouse sites will be reclaimed. This filling in will also bring streets out to the wharves, and in short make the waterfront easily accessible for teams, street cars and all vehicles or foot passengers that may have business there. The grades from all of these wharves to the central business district are easy, the elevation at Fourteenth street and Broadway being about twenty-four feet above the low tide line. The incline from the latter point to the estuary wharves is on the average one foot in each 160 feet of distance traveled, a grade of less than two-thirds of one per cent. An equally easy grade is obtained on the streets that reach the west waterfront. In other words, the draying to and from

these wharves is on streets that are nearly level. That means large loads, fast time and general economy in handling freight.

On the west waterfront and in the Key Route basin there is planned and being carried out a comprehensive scheme of development of their water side terminals by the Western Pacific, the Southern Pacific and San Francisco-Oakland Terminal Railway companies. The Santa Fe has an extensive frontage on the estuary just above the Webster street draw bridge which it is announced is to be improved in keeping with the remainder of the harbor.

The federal government has agreed to turn over the draw bridges over the tidal canal to the county of Alameda, and this will permit of the canal being used for navigation. This opens the waters of San Leandro Bay to commerce, and a survey has been made of the last-named waters by the government harbor engineers.

The plan of waterfront improvement proposed by Lieut. Col. Rees, and which has been referred to, contemplates that San Leandro Bay be finally included in the general scheme. This will give a continuous stretch of navigable water along the shore line from San Leandro past Oakland, and the Richmond shore to Point Richmond.

The Rees survey contemplates that the terminus of the Key Route ferry lines be changed from the present long trestle end to some point on the east side of the proposed channel, possibly near the present Oakland mole end. This plan would concentrate a large portion of the ferry traffic at the south entrance to the proposed channel, the other entrance to which is to be off Point Richmond.

NEW FOREIGN TRADE DEPARTMENT OF LOS ANGELES CHAMBER OF COMMERCE

It is significent to note the strides Los Angeles is making, reaching out, as it were, to the possibilities of greater commerce for this magnificent and rapidly growing city. The enthusiastic citizens of Los Angeles so generously assisted by the United States Government which has spent millions of dollars to make it a safe and commodious port, are endeavoring to make Los Angeles a prominent link in the chain of cities on our coast which will be ready for the opening of the Panama Canal.

Ex-Secretary of the Navy, Meyer, who visited Los Angeles over two years ago, at that time prophetically exclaimed: "As I viewed your harbor yesterday, I tried to realize what I shall see if I come here ten years hence. I pictured to myself a harbor full of ships, unloading their cargoes of manufactured goods from the East and taking on cargoes of fruits and oranges. I pictured the ships of the Orient unloading here and reloading on their way to the ports of the Atlantic; I saw the immigrants from the Mediterranean diverted here from their Argentine destination, coming to work on your farms and in your orchards and adding to the prosperity of your homes and your fields."

In the matter of coastwise commerce, there can be no great concern, but in the general movement for vast foreign trade between Pacific Coast ports and foreign countries, Los Angeles has not as yet become a factor commensurate with its location and importance.

For more than a quarter of a century the Los Angeles Chamber of Commerce has fought aggressively, consistently and successfully for the creation and upbuilding of a great harbor, and for its safeguard and control for the benefit of its people. Its treasury and the time of its members have ever been used in constructive and protective efforts to that end.

Just as this organization has always been first in unwavering service in the creation of a splendid harbor, so should it be first in a world-wide campaign for business to assure its future greatness and prosperity.

It is thus eminently fitting that the Chamber of Commerce is taking prompt and vigorous action that Los Angeles may receive its proper share in the fruits of the mammoth enterprises now rapidly approaching completion. If Los Angeles has an ambition to become an export center of great magnitude, she must work unceasingly to accomplish its realization.

In a well organized, well equipped and well sustained foreign trade department is to be found the intelligent and effective instrument to attain that end.

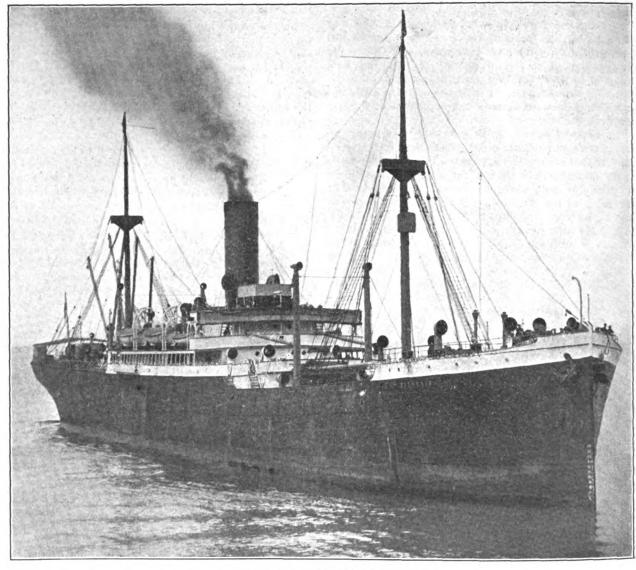
NEW STEAMSHIP SERVICE INAUGURATED

The Border Line Transportation Company has recently been incorporated under the laws of the State of Washington to engage in a general business between Puget Sound and British Columbia points. At present the line owns and operates the American S. S. "Fulton" and has under charter the British S. S. "Leona," giving a service every three days.

It is the intention of this company to purchase or build another suitable American boat to be operated with the S. S. "Fulton."

The Border Line Transportation Company will be operated by Dodwell & Co., Ltd., as agents. These vessels will not only act as feeders and distributors for the ocean vessels, but will also handle the output of the Powell River Company, Ltd., located at Powell River, B. C., which company is at the present time manufacturing 150 tons of paper per day.





S. S. "SITHONIA."

With the arrival of the S. S. "Sithonia" at Vancouver, B. C., and Puget Sound ports, the Hamburg-American Line have inaugurated their new Trans-Pacific Freight Service. The "Sithonia" arrived at Vancouver on the 5th of May, two days ahead of her schedule. On May 7, this vessel reached Seattle, leaving the same evening for Portland, arriving there on the 9th, and sailing on the 17th for Puget Sound ports. The "Sithonia" sailed for Yokohama with full cargo on the 21st of May. She is 420 ft. long, 55 ft. 10 in. beam, 30 ft. 9 in. deep and of 11,400 tons displacement.

The next vessel of the Hamburg-American Line to reach Pacific Coast ports will be the "Saxonia," due at Vancouver on June 21, Puget Sound on the 24th, Portland on the 29th, sailing from Seattle about July 11 for Yokohama. She will be followed by the "C. Ferd. Laeisz" a month later and the "Brisgavia" the following month.

The directors of the Peninsular & Oriental Steam Navigation Company announce a dividend at the rate of 5 per cent per annum on the preferred stock, and an interim dividend at the rate of 7 per cent per annum on the deferred stock of the company for the half-year ended March 31st.

On June 21st, the Chamber of Commerce excursion from Seattle will leave for the North on its five weeks' tour of Alaska and the Yukon. All reservations have been taken and it will be the most extensive and important excursion ever undertaken. The party will go to Skagway, with many stops enroute, thence over the White Pass and down the entire Yukon, out at St.

Michael and thence into Bering Sea and back via Prince William Sound and Cook Inlet ports. About a dozen Eastern newspaper men will be members of the excursion party.

THE ACCIDENT

Two Scotchmen were out one very cold day. One had no ear-muffs and was rubbing his ears vigorously.

"Sandy, mon," said the other, "I wonder you would na wear yer ear-muffs."

"Nay, mon, I have no worn them since the accident."
"The accident?"

"Yes, the squire asked me to have a drink and I didna hear him."

Public



SAN FRANCISCO, CALIFORNIA, U. S. A.

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AID OUR SHIPPING AND SHIPBUILDING

Postoffice, San Francisco, Cal.

Discrimination in trade and transportation to protect our shipowners and merchants from adverse regulations and devices of rival nations will in the near future, in connection with the tariff bill, constitute the debate royal in the United States Senate. That the rehabilitation of our Merchant Marine cannot be achieved by any other but a consistent and well-studied policy, taking into thorough consideration all and every factor influencing such upbuilding favorably and adversedly, is an old established fact. We have always favored the Sulzer Bill and rejoice in the policy of the preferential duty paragraph of the Underwood Bill for which the House cleared the way, and, we trust, for the Senate to follow. This should be the entering wedge to help restore the American Merchant Marine to the place it once held on the oceans of the world.

A leading morning paper on this Coast dwells editorially on the Underwood Bill under the heading of "Ship Subsidies in Disguise," stating: "Of course American shipowners, having this advantage over their foreign competitors, and not being philanthropists, would not donate it to the merchants, and ultimately to the consumer in the shape of reduced freights. They would keep it." We advise the writer of the above article to join the National Marine League, to which reference is made elsewhere in this issue, and thoroughly learn under what discouraging restrictions our shipowners are operating, in comparison to those of other nations in possession of just and favorable navigation laws. Is the person guilty of this statement aware of the fact that the United States Government has recently chartered not less than sixteen British cargo vessels to carry coal from the Atlantic seaboard to ports of the Pacific, to enable the United States Navy to move its fleet from the East to the West and vice versa? Does it appear as if the American shipowner "would keep it all"? No. Mr. Editor, aside from the lack of American tonnage, which in time of peace is impossible to remove from established routes, the American shipowner can under the present prevailing laws not compete with his foreign rival.

While direct subsidies may be condemned as unconstitutional in our country, the people want to know why commercial treaties now hampering the over-sea commerce of the United States under our flag should not be abrogated. We cannot comprehend why there should be any difficulty in the abrogation of such commercial contracts, when as a matter of fact the ocean shipping of the leading maritime nations of the world must to a large extent be considered an aided industry of these respective nations. We are glad that the people of the United States of America have just awakened to the imperative necessity of not remaining the one nation altruistic enough to think that charity begins abroad.

Do not only let us earnestly commence to aid our shipping, but let us strive to further facilitate the Underwood Bill and strongly support our shipbuilding industries with might and main. In this connection we quote the sage Thomas Jefferson, who nearly a century and a quarter ago said: "For a navigation people to purchase its marine afloat would be a strange speculation, as the marine would always be dependent upon the merchants furnishing them. Placing as a reserve with a foreign nation or in a foreign shipyard, the carpenters, blacksmiths, calkers, sailmakers and the vessels of a nation, would be a singular commercial combination. We must therefore build them for ourselves."

THE SEATTLE PORT ELECTION

The insistent and disappointed advocates of the Harbor Island Terminal which principally consist of dominating and powerful corporations, as well as individuals who are specially and selfishly interested in the creation of a costly terminal at a point too far removed from the shipping center of Seattle, are apparently dissatisfied with its efficient Port Commission.

On June 17, Seattle will hold a special election in matters pertaining to the Port district to ascertain the public's will anent certain changes in the location of the proposed Harbor Terminals and whether it is desirable to increase the number of Commissioners from three to five members.

General Chittenden, the efficient President of the Board and an engineer of national reputation, in conjunction with his two colleagues have conceded that while Harbor Island may perhaps be a good place for the construction of such terminals, they are fully convinced, and in our opinion justly so, that other locations in Seattle's splendid harbor area possess far greater advantages for the construction of wharves.

The East Waterway, where the ground is less expensive and which is nearer the business center, therefore being more desirable for water and railroad transportation, is decidedly one of the more logical points.

It must be admitted by every unbiased and experienced engineer, shipping and transportation man knowing Seattle that it is far more practical and unquestionably more satisfactory to build modern wharves at different favorable points of Seattle's harbor area instead of concentrating the principal shipping and trans-shipping activity at one point where the hauling of freight from and to the city must become almost prohibitive.

The Pacific Marine Review suggests that the entire matter be placed in the hands of the present Port Commission, which has proven its competency, efficiency and integrity and has worked to the best advantage and for the protection of the people's interests,



The three Commissioners have done well, and we cannot see what could be gained by a proposed increase of membership of the Board, unless some of the disappointed Harbor Island Terminal advocates have a longing to disrupt the good work done in the past. The voter will decide.

HOMEWARD CONFERENCE IN TRANSPACIFIC TRADE

While it is still premature to state definitely that the Merchant Marine committee of the House of Representatives will recommend that the pooling or conferences of steamship lines should be countenanced on condition of strict government supervision, it is nevertheless a likelihood.

Such apparent decision of the committee must be attributed to their recognition of the fact that on unregulated competition between foreign steamship lines injury would result both to shippers of merchandise and to the steamship companies so concerned.

We have always opposed the attempt to dissolve this unquestionably necessary conference and while the investigation into the methods of these so allied steamship companies by the committee was apparently surrounded by an antagonistic atmosphere toward these companies, we note with keen satisfaction the apparent change of attitude by the committee.

To attempt to conceal or misrepresent the real principle involved, to attack and seek only to dissolve a "foreign trust or foreign combination," injurious to domestic interests, would simply be the evading of the real point at issue, since all domestic steamship lines engaged in the trans-Pacific trade are equally members of such conference. By attempting to destroy the stability and permanence of the, in comparison, small homeward trans-Pacific traffic moving, no one can hope to encourage either present domestic steamship lines or any other domestic steamship line in contemplation.

That this prolonged investigation should eventually result in convincing the members of the committee that although regulated competition may be attended with certain evils, it is nevertheless necessary to insure stability of freight rates and the essential regularity of service in every respect adequate to the requirements of our commerce. This should dispel the idea that existing shipping combinations are a hindrance to the further development of our foreign commerce, an obstacle to the upbuilding of our own merchant marine in the off-shore trade and an imposition on our shippers concerned in the oversea commerce of the United States of America.

THE SUGAR TAX

No single measure has in years past so intensely concentrated the public interest than the Tariff Bill which passed the House of Representatives some weeks ago. While it now appears doubtful whether this vital Bill will enter the Senate before the latter part of June, the nation at large is awaiting with keen concern the intelligent and valuable debates upon the Underwood Bill, with a desire that whatever is done in this great issue should be done as speedily as is consistent with due deliberation, thus relieving business in general of all and every suspense.

While we do not attempt even in the remotest way to recapitulate any of the many important articles involved, it seems the Underwood Bill will undergo some

modification before it becomes law. A thorough revision of Schedule K is essential, and while we absolutely believe in free wool, as a shipping paper we insistently have advocated and believe in a tariff on sugar, as the success of our shipping on the Pacific so much depends on this tax.

The sugar tariff should not only be maintained as a convenient measure to give the Government a considerable and constant source of income, but as an aid to our Pacific ocean trade. The exchange of products with the Hawaiian Islands and this Coast should not be hampered, and after all the present Congress favors a constructive rather than a destructive policy.

However, the tax on sugar should consist only of a moderate impost. The Bill as introduced keeps a low tariff on sugar for a period of three years. This appears a just compromise to make at this time, since it would leave sufficient opportunity for the next Congress to ascertain in the way of revenue experience and stimulation or destruction of industry whether this period should be further extended or not.

ANOTHER SEAMEN'S BILL

From all appearance there has been great rejoicing by those who consider the Seamen's Bill the just measure to build up our Merchant Marine since reports from Washington, D. C. reached this Coast that two of our Cabinet officers are favoring the desertion of seamen on foreign vessels while in American ports, which is one of the many weak girders comprising the structure of this Bill.

We predicted in one of our previous issues the framing of a new Seamen's Bill, which has since been launched and introduced at this session and which contains even more radical measures than the Wilson Bill, with much that is good and much that is new; but that which is good is not new, and that which is new is not good.

However, men in charge of shipping affairs and of acknowledged authority on maritime matters in our country have apparently lost all interest in this new radical measure. Since, through their efforts, the Wilson Bill was so thoroughly thrashed out before the Senate Committee on Commerce at the last session of Congress, they do not even care to read the new "La Follette Bill." Would this not seem to indicate that our shipping men have made up their minds what steps they will take if such pernicious legislation would ever succeed and become law?

There seems further to exist a disposition on the part of the Committee not favorable to a hearing on the new Bill at this session. Well—as the next session of Congress preceeds a Congressional election, one will again have an opportunity of observing the play of politics for votes!

A GOOD ONE ON CARY

We are in receipt of the following letter dealing with the Bill now before the House of Representatives introduced by the Hon. Wm. J. Carey: "Your article on page 34 of your May issue anent Carey's Bill before Congress. What a bally chump that man Carey must be; he has not the sense God gave Mother Carey's chickens. It would have been well had you headed the article: "Fools rush in where angels fear to tread." Can't understand why he would not want the rudder unshipped every hour as well."

(Signed)

READER.



THE NATIONAL MARINE LEAGUE

Mr. Patrick H. W. Ross, author of the "Western Gate," which well-known volume is a splendid proof of his keen and rescarchful insight and tireless and persistent work in maritime matters of our country, has founded and is President of the above useful League. The Vice-Presidents of the League include the Hon. Chas. Henry Davis, C. E., President Highways Association, Cambridge, Mass.; Hon. Woodward Emery, Counsellor at Law, former Chairman Harbor and Land Commission, Boston, Mass., and Hon. H. H. D. Peirce, former United States Minister to Norway.

The League, with headquarters in Washington, D. C., represents no one state or group of interests, but the imperative necessities and the united sentiment of the nation at large, and is entering upon a long and arduous campaign of public education in maritime affairs.

The PACIFIC MARINE REVIEW, as the League's new member, appeals to its many subscribers and urges all to join this League, which in itself may be considered a manufacturer—a manufacturer of public opinion.

Since it has become impossible to obtain adequate legislation of a necessary and enduring nature, unless there is the essential and enduring public opinion behind it, the forming of such a League is indeed a paramount issue and of intrinsic value to the nation at large for the furtherance of sane and just maritime legislation.

Our legislators are not only nominally but really Representatives and the only thing that permanently affects or should affect a Representative or a Senator is the public sentiment of the constituency he represents. Hence the necessity of a compaign of education and information on this great national question. It is only just and in every respect honorable to lay a question before the people for them to decide and then to pass it on to their respective Senators and Representatives for immediate action.

It is not always right nor always honorable to attempt legislation by the familiar process of "lobbying" and it should therefore be thoroughly understood that it is not the purpose of the National Marine League nor is it the desire of the League to attempt the influencing of legislation by making appeals to Senators and Representatives. The appeals of the League will be made direct to the voters of the country. The aid that Senators and Representatives can afford by helping the discussion of this imperative question among their own people "back home" is invaluable, but the pressure upon them for adequate remedial legislation will not come from the League but from their own people all over the United States.

Public sentiment when rightly animated and centralized can be made to bring about the assurance necessary to restore this country's over-sea commerce, to be carried as of yore in American-built ships on the oceans of the world. This is the animation that the League endeavors to impart.

As soon as the first hundred thousand dollars necessary for a working fund has been donated, the affairs of the League will be under the business control of its founders and their successors in office, on much the same lines as the administration of the Carnegie Peace Endowment Fund.

The National Marine League indeed promises to become an excellent training school for some of our lawmakers who could obtain through this medium a thorough insight in spheres in which they have dabbed with pretense so long and, alas, principally to the detriment of affairs which are of most vital importance to the nation at large.

"Trade follows the flag" and "Keep the flag flying" are the mottos of the National Marine League.

PORTS OF THE PACIFIC

By GEN. H. M. CHITTENDEN

(Continued.)

Competition of Ports

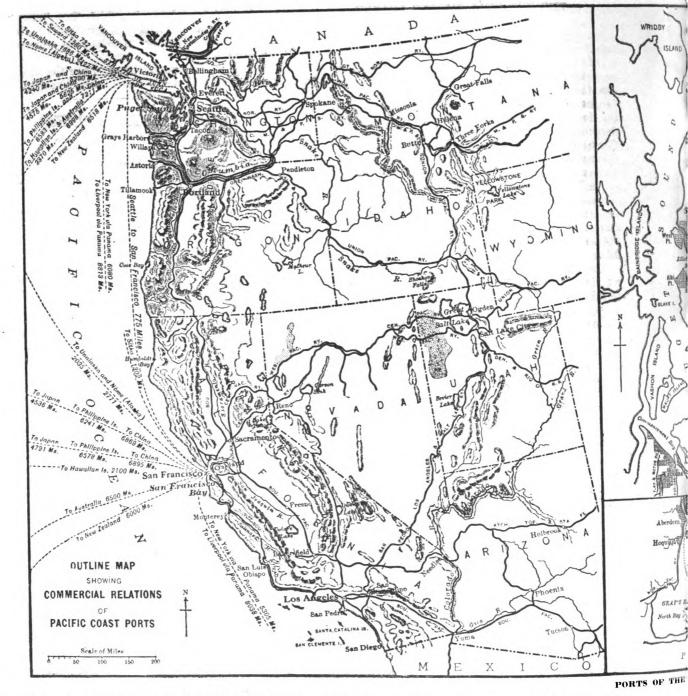
This interesting state of things suggests a primary basis for comparing the ports of this Coast, namely, their relations to one another as commercial rivals. In the long stretch of coast line from latitude 32 degrees 30 minutes to latitude 54 degrees 40 minutes, there are certain points of true strategic value; that is, points the possession of which gives the possessor important advantages over his competitor. Broadly speaking, there are two great divisions of the Coast from a commercial point of view—the north and south with the Oregon-California line the approximate boundary between them. Only in a very general sense are these two sections of the Coast competitors. They both reach out, it is true, to Hawaii, the Orient, and Alaska, and inland to common interior points; but each has some advantage peculiar to itself—a sort of proprietary right in certain spheres in which the other seems rather an interloper. The competition in such cases is not keen, for the advantage of the more favored rival is too pronounced to be coped with successfully.

It is in a narrower sphere that the competition of these ports becomes really intense. San Francisco, Los Angeles, and San Diego have little to fear from the ports of the north, for their respective hinterlands merge only in the far interior of the Great Basin, but they have a wholesome respect for one another. Portland poaches but slightly on San Francisco's preserves, and Puget Sound still less, but the port on the Columbia never for an instant lets her sisters farther north forget her existence. Puget Sound and the ports of British Columbia are also competitors of a strenuous type in spite of the artificial barriers of nationality, tariff and different customs and laws. In these local groups competition is really keen, and each competitor is feverishly anxious as to what its rivals are doing, while the still smaller units of the group flourish either by virtue of special advantages or simply on the crumbs which fall from their wealthier sisters' tables.

San Francisco Bay

Having thus touched in most general terms on the trade relations of different sections of the Pacific Coast, let us consider in some detail the principal ports, still from the point of view of their commercial relations. Whatever changes the future may have in store, it is now true, and for a long while will so remain, that San Francisco Bay is far and away the most important port on the Coast. It is a wonderful port—wonderful in the strategic relation to its California hinterland and to the great interior of the country; wonderful in its physical conformation as a vast sheltered harbor opening in, through a narrow and easily defended entrance, from a coast line almost devoid of harbors for hundreds of miles in either di-

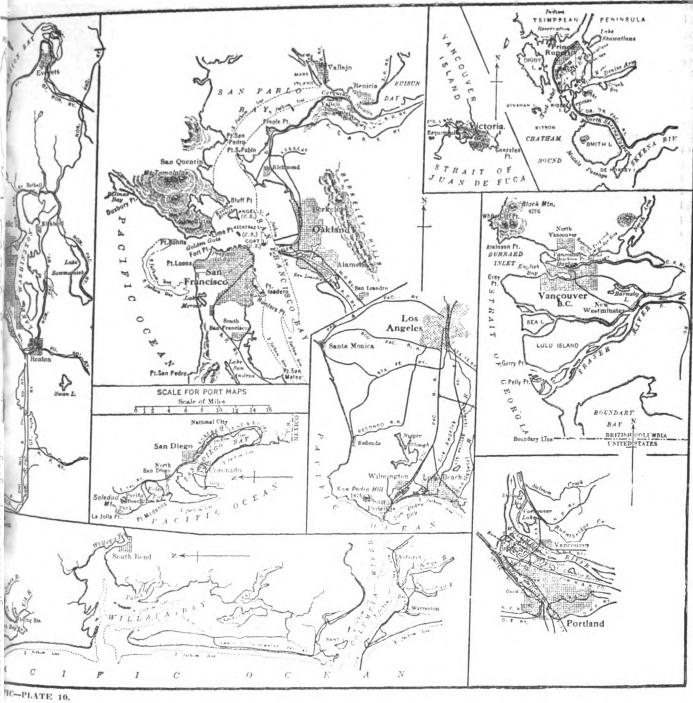




rection; wonderful in its romantic history, and wonderful in its relation to the commerce of the world. Nature wrought a masterpiece when she made San Francisco Bay. Its great expanse and its navigable connections north and south, through the rich valleys of the San Joaquin and Sacramento, fit it perfectly as the entrepot of a vast empire. The work of nature was supplemented by the good offices of fortune, which early turned the attention of the world to this port and laid the foundation of its future greatness so deep that neither earthquake nor the growth of rivals can shake it. The Golden Gate-named three centuries before, in beautiful prophecy of the Argonauts of Forty-nine, whose anchors dropped into yellow sands brought down by the slicken-laden streams of the Sierra-was the scene of a mighty commerce while yet only random traders sought the furry wealth of the harbors farther north. The first transcontinental railway had poured its traffic into the valley of the Sacramento for twenty years before any other portion of the Coast was similarly favored. San Francisco had written the most important chapter of her history while her sister ports were still almost unknown to the world. Congress did well when it selected the California metropolis as the site for the celebration of the opening of the great Canal. What a contrast it will be—the struggling mass of humanity and freight on its way across the fever-stricken Isthmus to the land of golden promise in Forty-nine, and the floating palaces which will then pass safely through Culebra Hill to a scene of resplendent riches undreamed of by even the wildest imagination of sixty-six years before! Where else on the round earth has modern progress wrought so great a change in so short a time?

Los Angeles and San Diego

In Southern California, the location of highest strategic value, from a commercial point of view, un-



fortunately, happened to be where Nature did not provide a harbor, while the one really good natural harbor on that section of the Coast is not located where it will best serve the commercial needs of the country. Los Angeles, by virtue of its relation to the great Southern trade routes east, its marvelous resources in agriculture, its close proximity to the oil fields of Southern California, and the inestimable wealth of its winter climate (not exclusive in this, however), is incontestably the center of activity of Southern California. So little did Nature do in the way of providing a port in that vicinity, however, that the town did not grow up on the seashore at all, but twenty miles inland, and the possibility of making it a genuine seaport was clearly an afterthought in its development. Now, this consummation is its chief ambition, and a superb effort is being made to realize it. Los Angeles will become a great port, not because Nature made it so, but because her own virile people have

said so. Its future harbor will be almost wholly artificial, but it will be a great harbor nevertheless, and will stand all the more to the credit of its people because of the sacrifices which they will have made to obtain it.

Southeasterly from Los Angeles, eighty-nine miles, lies the splendid land-locked harbor of San Diego, ideal in its physical advantages. The fact that it never has become of first importance, however, shows that it requires something besides Nature's aid to make it a great port. It is not well located with reference to rail routes east; it has not as good a tributary country as Los Angeles; it is hemmed in by bold uplands close to the shore; and, worst of all, it suffers the purely artificial handicap of close proximity to the national frontier. Still, in spite of these drawbacks, the great natural advantages of the harbor, the lack of such advantages at Los Angeles, and the arbitrary rail tariffs which until recently have made freight from Port Los

Angeles to the main city cost as much as from San Diego itself, though four times as distant, make San Diego a powerful competitor of her sister city to the north. Of course, she is bound to lose something of her relative advantage as Los Angeles develops her port, and particularly when the proposed municipal belt line connects that city with the sea and reduces freight ates to a nominal figure.

These two Southern ports have naturally cut somewhat into the trade of San Francisco, and will continue to do so. This is to be desired, as far as they may Letter serve the needs of the public as a whole, and beyond that point they are certain not to prevail if the communities of San Francisco Bay do their duty. California is a State of vast extent and immeasurable resources, and its hinterland is all the country to the eastward. In this illimitable field, and with the boundless ocean to the west, there will be sustenance for all, and the final balance among the ports will be adjusted on the basis of maximum efficiency of service to the public.

The Columbia

Northward from San Francisco the first location of high strategic value is the Columbia River-the chief river of the Pacific Slope-which here breaks through the mountain barriers and opens a low-grade route to the interior of the country. It is the only point in United States territory where the great Coast-Sierra-Cascade Barrier is completely traversed by a watergrade route. The main valley extends directly back from the sea a distance of seventy-five miles, where its tributaries begin to spread out until they expand like an enormous fan, giving arterial highways to a water-shed of 250,000 square miles, with routes across the Continental Divide to the far-spreading country beyond. The main stream is susceptible of improvement for navigation as far as into British territory, and its principal tributaries can be navigated for short distances; but the rapid fall of most of the streams, and the invariable accompaniment of rock rapids, make the liberal use of locks a necessity, and this presupposes heavy cost. In any event, it is certain that the river will be improved in the near future so that boats can ascend at all seasons as far as Central Washington, say, to Priest Rapids. This water route and the low-grade rail routes on either side, ramifying along the tributaries in all directions, give the Lower Columbia ideal communications with its hinterland, considering the exceedingly mountainous character of the country.

Plate X shows, to any trained eye, the immense advantage of the situation at the junction of the Columbia and Willamette Rivers. It is a great cross-roads. To this point vessels from the ocean, once over the bar, can safely ascend. Here, rail and river take up the route to the far interior. South is the rich Willamette Valley and Nature's land route to California. North is the Cowlitz Valley and the route to Puget Sound. The possibilities of the situation are enormous and such as will survive all competition. The chief drawback, as far as its commercial relations with the outside world are concerned, is its connection with the sea. The Columbia Bar, built up from the detritus of a vast and steep-sloped water-shed, was originally the most formidable and dangerous known to navigation, and the problem of opening and maintaining a safe and commodious channel across it is one of the most difficult in the whole range of river and harbor engineering. Only a moderate degree of

success has been obtained so far, and that at heavy cost. Other plans have been suggested, such as cutting through the sand spit to an artificial harbor to be built south of the jetty, or through the isthmus on the north to the fine natural harbor of Willapa Bay; but they have never received serious attention, and the plan of deepening the bar by jetty construction will probably continue. With it must go, hand in hand, the project of deepening the river itself in its 100mile channel from the bar to the port. The situation is something like that at Los Angeles in that man must be relied on to make good the large deficiency of Nature. This, as the writer has elsewhere observed, the enterprising citizenship of Portland is resolved shall be done, cost what it may, to the end that there may be realized, even more than at present, the prophecy of one of her own poets, who has pictured the time: "When through this Gate the treasures of the North

Flow outward to the sea."

Puget Sound

Proceeding northward, the next great strategic point in the commerce of the Pacific Coast, and, in some respects, the most important of all, is Puget Sound. It is a vast inlet from the sea through a strait fifteen miles wide and nearly 100 miles long, branching both north and south, in sheltered inland waters which abound in ideal natural harbors. So perfect are these harbors that their chief defect is an excess of what anywhere else would be considered almost the chief advantage, the depth in some being such that anchorage ground is scarce, and extending so close in shore as to make wharf building difficult and expensive. The tidal range is also large, with strong tidal currents, and the teredo is very active. Except for these drawbacks, the Sound harbors are ideal. Take Scattle, for instance. Into the spacious enclosure of Elliott Bay, a ship can enter without tug or pilot and pass directly to berth under her own steam in all conditions of tide, and in almost all conditions of weather, and always feel certain that her hull will not touch bottom. It is the most favored port in the world in this respect, excepting only one or two of its sister ports on the Sound, which enjoy the same advantage.

Nature has certainly lavished her richest favors on these ports and provided them with advantages which no expenditure of money can ever give to a port situated as is Portland or Los Angeles. But, as an offset to this great advantage, she has placed a handicap which is of very serious consequence; she has barred off Puget Sound from its great hinterland to the east by a massive mountain range, the lowest passes of which are more than 3,000 feet high. These passes have been scaled successfully, it is true, and the terminal rail rates are the same as to Portland, but the handicap is there, nevertheless, and is the most serious commercial problem which Puget Sound faces today. It is as if the Catskill Range, with twice its actual height, extended along the coast in an unbroken wall from Boston to Baltimore, shutting out New York from its rightful hinterland. Local enthusiasts in both Portland and Seattle speak of their respective cities as the "New York of the Pacific." In truth, each is only half New York; or rather, New York, in its natural advantages as a port, is the Seattle and Portland combined of the Atlantic. Its harbor rivals that of Scattle, while its Hudson River route to the interior rivals that of the Columbia. Puget Sound does not fully appreciate this difference. Seattle and Tacoma are spending millions in developing harbors which are already perfect beyond any in the world, but not

a cent to overcome this barrier which stands between them and their hinterland. The writer once had the temerity to suggest that a low tunnel, serving all the railroads and giving practically a water-grade connection between the Sound and the Columbia Valley, was essential to the commercial supremacy of Puget Sound ports. Time alone will justify or discredit this prediction, but it is certain that with an outlay no greater than what has been expended on three of the Alpine tunnels, a line could be secured which would serve, on the most favored gradients and with shortest distances, the entire country from the Great Basin to the interior of Canada. Puget Sound is the natural entrepot for the trade of Alaska, is a day nearer the ports of Japan and Northern China than San Francisco, and has the best harbors in the world. Only the natural barrier which separates it from its hinterland keeps it from playing the part which it should in the commerce of the Pacific.

We have considered Puget Sound as a great harbor whose entrance is the broad, deep Strait of Juan de Fuca. Inside the Strait there are numerous competing ports, of which Seattle is the central and most important. Thirty miles farther south is Tacoma, Seattle's most formidable competitor in United States waters. It has a harbor rivaling that of Scattle, and has been particularly favored by the great railway systems, which have given it an importance even beyond what its comparative advantages justify. Besides Tacoma there are the harbors of Everett, Anacortes, and Bellingham, all of which have splendid natural advantages and do a thriving trade. On the west side of the Sound is Port Townsend, once looked on as the coming port of Puget Sound, but now important mainly as the headquarters of the Customs District of the Sound and the Quarantine Station. It is on the wrong side ever to assume first importance.

All the great strategic points in United States territory, which we have considered, have been guarded by elaborate sea-coast defenses, while San Francisco and Puget Sound have been made great naval bases. (To be continued.)

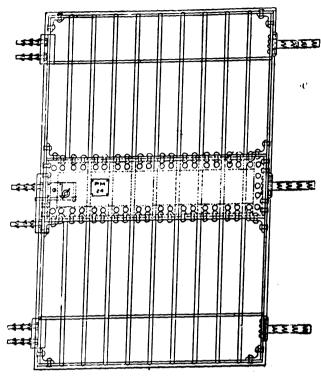
WORK UNDER WAY AT HARBOR OF YOKOHAMA

The Director of the Harbor Office, at Yokohama, Japan, informs us that there is no definite plan for extending the harbor limits of that port at the present time, but that the harbor improvement works, which comprise the reclamation of land and construction of quays, have just been completed and thirteen vessels are now enabled to lie alongside the quays at the same time. In addition to this, the Director reports that "the iron pier which runs out from the custom house is in course of reconstruction, making considerable improvements and several arrangements with a view to giving special facilities to passenger steamers of large size. The works will be completed in 1916, and then four steamers will be able to lie alongside at the same time. Dredging operations are being carried out to increase the depth of water in the harbor; twothirds of the harbor inside the breakwaters to have a depth of from twenty feet to thirty-five feet at low water in the ordinary spring tide, to accommodate seagoing vessels with moorings of about forty feet."

Captain I. N. Hibberd, Superintendent of the Pacific Coast Steamship Company, has just returned from quite an extended trip East.

DOORS FOR LOCK TUNNELS, PANAMA CANAL

Award has been made to the Mesker Iron Company of St. Louis for the manufacture of ninety-nine steel



FRONT ELEVATION OF DOOR TO OPERATING TUNNEL

doors, complete, to close all entrances to the operating tunnels of the locks. The contract price is \$4,398 and delivery is promised in sixty days.

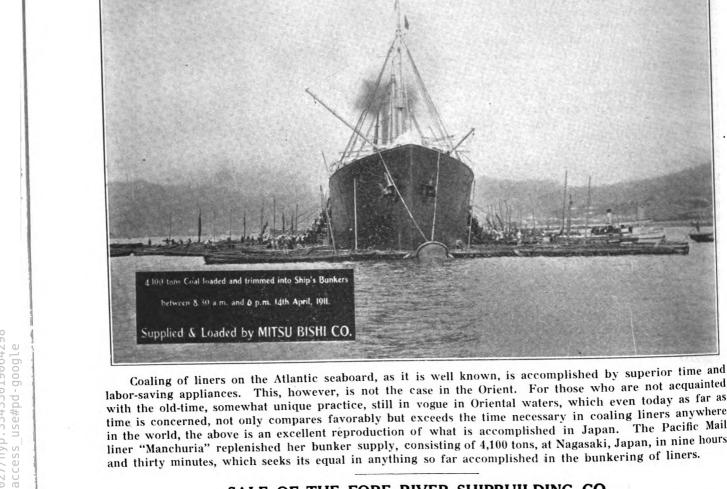
The doors are to be rectangular in form, constructed of open hearth structural steel, galvanized, and equipped with the necessary keys, stops, gudgeons and hinges. All holes are to be drilled and locks and hinges properly attached. Each door will be marked with a brass name plate; for example, "Gatun No. 1, etc.," "Pedro Miguel No. 1, etc." The numbers used will correspond with the numbers placed on the keys. The hinges, pins and gudgeons are to be of steel; the hinge part will be fastened to the gudgeon and riveted in, and not of the loose-pin type.

The doors are to be fitted with brass locks, consisting of a large locking bolt in the horizontal plane, made of steel, which will be opened or closed by a "T" handle, also of steel. Each lock will have two flat keys of Yale type, and the locks are to have fourteen master keys, six for Gatun Locks, which will open all of the forty-four doors; four for the twenty-four doors at Pedro Miguel Lock, and four for the thirtyone doors at Miraflores Locks. All of the ninety-nine locks are to be different as to individual keys, and each key will have an initial stamped on it, as "G" for Gatun, "P. M." for Pedro Miguel, etc. Two of the doors at Gatun Locks will be forty-one inches wide and seventy-one inches long; all the others will be forty-seven inches wide and seventy-one inches long. They will be installed by the Commission forces.

It is hardly probable that any action will be taken at the extraordinary session of Congress on the Bill introduced by Senator Elihu Root to prevent discrimination in Panama Canal tolls.



Record Coaling at Nagasaki. Pacific Mail Steamship Co. S.S. "MANCHURIA."



labor-saving appliances. This, however, is not the case in the Orient. For those who are not acquainted with the old-time, somewhat unique practice, still in vogue in Oriental waters, which even today as far as time is concerned, not only compares favorably but exceeds the time necessary in coaling liners anywhere in the world, the above is an excellent reproduction of what is accomplished in Japan. The Pacific Mail liner "Manchuria" replenished her bunker supply, consisting of 4,100 tons, at Nagasaki, Japan, in nine hours and thirty minutes, which seeks its equal in anything so far accomplished in the bunkering of liners.

SALE OF THE FORE RIVER SHIPBUILDING CO.

We have received notice through the press of the sale of the Fore River Shipbulding Co. to the Bethlehem Steel Co., and we are reminded of that notable date in history about three years ago when the news was flashed around the world that the contract for the two battleships for the Argentine Government was obtained by American shipbuilders in competition with foreign shipbuilders.

We are always proud to see our own shipbuilders obtain foreign contracts in honest competition with European or British shipbuilders, but to obtain them at a great financial sacrifice is folly and reflects no credit to any one connected with and influential in obtaining the contracts.

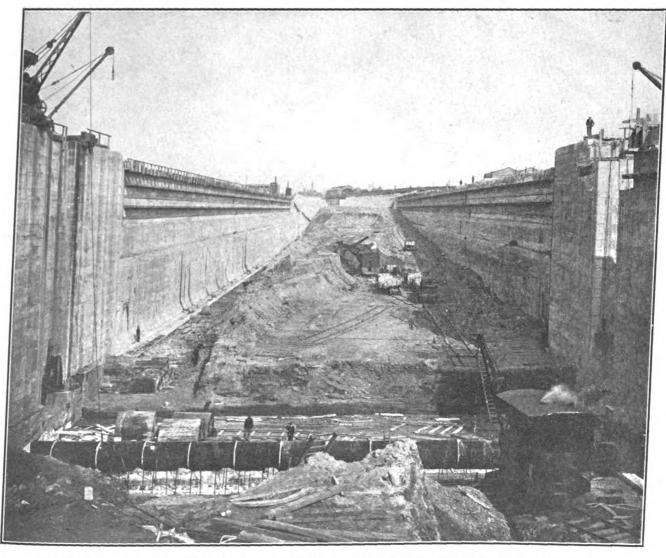
In the present case it was considered at the time the contract for these vessels was obtained that the Fore River Shipbuilding Co. was launching out on a questionable venture, and from the press reports it is apparent that the contract was in a great measure the cause of impairing the financial standing of the

The circular addressed to the stockholders by the directors states that "being aware that the completion of certain existing contracts would in the near future leave the company with its working capital seri-

ously impaired to such extent as to necessitate financing, have learned with satisfaction of an arrangement made by a stockholders' committee acting on the initiative and suggestion of the directors and representing a very large proportion of both preferred and common stock, to sell the property of the company to the Bethlehem Steel Co., which assumes all its obligations and takes all its assets." Shipping Illustrated states in this connection as follows:

By the terms of the sale, the Bethlehem Steel Co. takes over the plant and other assets of the Fore River Co., for which it pays \$600,000 in Bethlehem first lien and refunding 5 per cent mortgage bonds due May 1, 1942. The committee of Fore River stockholders, on the other hand, agree to purchase and arrange for the sale of \$750,000 of first mortgage twenty-year 5 per cent bonds of the new corporation taking over the plant, said bonds being guaranteed by the Bethlehem company. The Fore River Shipbuilding Co., as reorganized September 6, 1901, a successor to the Fore River Ship & Engine Co., of 1901, had a total capitalization of \$4,800,000, six per cent non-cumulative preferred and On the basis common stock, divided equally. of the actual market value of Bethlehem bonds, preferred stockholders of the Fore River Ship-building Co. will lose about 80 per cent on the par value of their investment, while common stockholders will receive nothing. The last balance sheet issued by the Fore River company, as of December 31, 1912, showed a valuation of machinery and real estate of \$3,631,368, and a surplus of assets over liabilities of *236,481. On this basis the practical sale of the plant for \$600,000 looks absurdly cheap, but the purchasing interests are paying a large sum above the \$600,000 Bethlehem bonds which the Fore River stockholders are to receive, for they must liquidate and pay the debts left by the old regime. It is now admitted that unless Mr. Charles M. Schwab, of the Bethlehem company, had come to the rescue and taken over the yard,

the Fore River Shipbuilding Co. would have had to close its doors for the lack of funds wherewith to continue operating. The contract with the Argentine Government is said to contain a clause whereby in case of the financial failure of the builders, the Naval Commission may take charge of the work and push it to completion after cancelling the contractors' bonds. Such a contingency would have created an intensely interesting situation, and lovers of the burlesque in real life will regret that the opportunity for such an international farce has been missed through the sale of the plant to the powerful Bethlehem company, who, having in view the supply to the Argentine Government of all its guns and armor, may be disposed to make concessions no shipbuilder could afford.

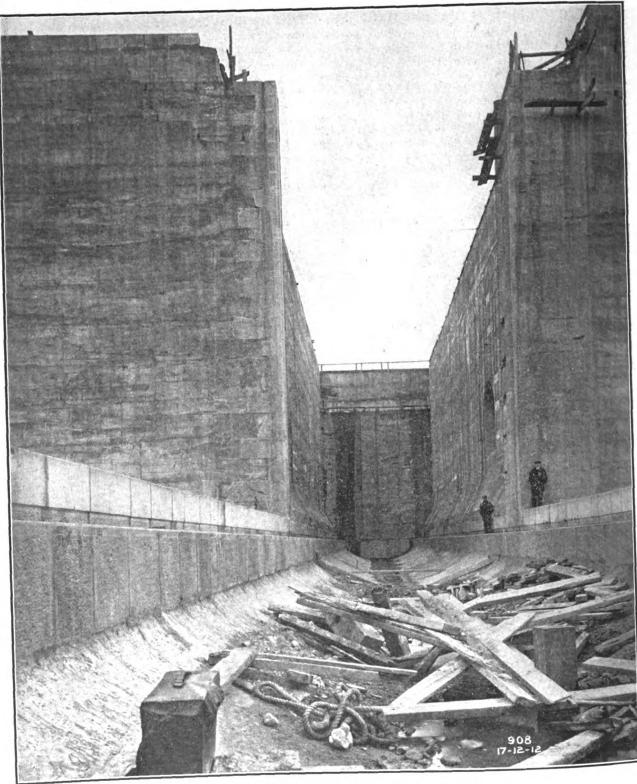


NEW GLADSTONE DOCK AT LIVERPOOL, TO BE OPENED BY KING GEORGE ON JULY 11, 1913.

The Mersey Docks and Harbor Board, under powers obtained from Parliament in 1906 for the development of land and foreshore previously acquired, promulgated a scheme for providing a large extension of its present dock system, at a cost of about £3,200,000, but owing to the depressed state of the shipping industry and the stringency of the money market, the scheme was kept in abeyance for a time.

Owing to the rapid developments which have since taken place in the building of monster steamships, and the certain advent of vessels much larger than the "Mauretania" and the "Lusitania" requiring accommodation at Liverpool within one or two years, the

board was contrained to provide the convenience immediately necessary by a less ambitious scheme, capable of affording a certain amount of accommodation in a very much shorter time than would be required to carry out the whole original programme. It was therefore decided, in the summer of 1910, to adopt a scheme submitted by Mr. Anthony G. Lyster, the board's engineer-in-chief, providing an entirely new dock of adequate dimensions for the purpose in view, and capable of forming ultimately an integral part of the larger scheme which could not long be delayed. This dock, illustrations of which appear herewith, is now rapidly nearing completion at Liverpool



SPACE FOR CASSION-GLADSTONE DECK.

and will be ready for service sometime this summer. The Gladstone Dock is 1,020 feet long, or nearly 140 feet longer than the "Olympic," and has an entrance 120 feet wide. The structure of the dock is to be such that it will be available, when required, as a graving dock, for the overhauling and repairing of the largest steamers. The floor is laid in concrete at a level of twenty-nine feet below Old Dock Sill, and will be furnished with center keel blocks and side blocks. The entrance of the dock will be provided with a sliding caisson, which will have a clapping face on each side, so as to maintain the water in the dock, or to exclude it therefrom, according to the nature of the duties of the dock for the time being. On the north quay, a single-story shed, 900 feet long and 100 feet wide, with four thirty-cwt. movable cargo cranes, will be constructed. On the south quay, two movable cranes—one of forty tons and one of five tons-will be provided, the latter being available for use on the north quay when required. The entrance channel will have a width of 400 feet at its mouth, narrowing down to 120 feet at the dock entrance

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proper. The channel and a fairway approach thereto are being dredged to a depth of twenty-seven feet below Old Dock Sill. There will be a pitched slope on either side, and strong timber dolphins will be provided at suitable intervals as a guide to ships when necessary. At high water of lowest neap tides, say ten feet above Old Dock Sill datum, the depth of water on the sill of the dock will be thirty-five feet, and on high water of spring tides, say twenty-one feet above Old Dock Sill, the depth on the sill of the dock will be forty-six feet. In order that the dock may be rapidly cleared of water when required for use as a graving dock, powerful pumps are being installed. These are

five sets of centrifugal pumps with discharge pipes fifty-four inches in diameter, each pump being driven by a vertical four-cylinder two-cycle Diesel oil engine, running ordinarily at 180 revolutions per minute. The contract for the whole installation has been let to the Worthington Pump Company, Ltd., but the engines will be manufactured by Carels Freres, of Ghent. The duty required of the pumps is to empty the dock of its whole contents-amounting to about seven million cubic feet of water on an eighteen feet tide-in two and one-half hours. Certain of the pumps will be specially arranged to remove the drainage water from below the general level.

PORT IMPROVEMENTS AT VICTORIA, B. C.



INNER HARBOR, VICTORIA, B. C.

The coastwise and foreign trade of Victoria, B. C., has so materially advanced during the past three years that the Dominion Government has taken decisive steps in the improvement of this harbor, which is destined to be one of the most important on the Coast.

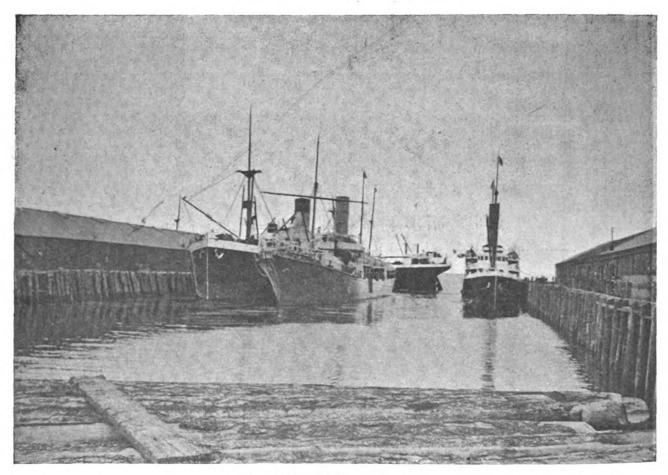
In 1909, 2,401 vessels employed in the coasting trade arrived at Victoria and 2,392 departed. In 1910, 2,636 vessels arrived and 2,635 departed. In 1911, 3,103 coasting vessels arrived and 3,123 departed, and in 1912, 3,457 arrived and 3,487 departed. Vessels engaged in the foreign trade have also increased during the past few years. In 1909, 903 foreign-going vessels arrived and 575 departed; in 1910, 777 vessels arrived and 513 departed; in 1911, 795 vessels arrived and 415 departed, and in 1912, 1,076 vessels arrived and 478 departed.

The first appropriation for the breakwater which is to be built by the Dominion Government in connection with the piers and improvements at the Outer Harbor of Victoria will amount to \$1,500,000. The piers to be built in connection with the breakwater will cost, with their warehouses, \$1,800,000. There will be four warehouses of 1,000 feet in length on each pier and the appliances for handling freight will be of the most modern type. The area of the Outer Harbor when thus completed will be 300 acres and the minimum depth at low tide will be thirty-five feet.

The breakwater is to be 2,500 feet in length and will serve as a protection to the entrance of the Inner Harbor, as well as the piers to be built and the Rithet Piers already in use, thereby materially benefiting the great number of coasting vessels entering and departing from the Inner Harbor. The drydock contemplated by the Dominion Government is to be located at Esquimalt Harbor, which is just adjacent to Victoria. A graving dock is already established at Esquimalt Harbor, this dock being 450 feet in length level with keel blocks, and 480 feet at gate on outer curve. The new dock is to be 1,150 feet in length, 110 feet at the gates and 35 feet of water over the sill. Accommodations can thus be provided for any ship now afloat, and in such a dock the "Empress of Russia," the "Empress of India," the "Empress of Japan" and the "Princess Charlotte" could be placed at one instance. It is estimated that this dock will cost in the neighborhood of \$5,000,000.

Shipbuilding, which is now being carried on with success at Esquimalt, will undoubtedly be stimulated with the construction of this drydock. The new steamer for the Canadian Pacific Railway Company, the "Princess Maquinna,' a thoroughly up-to-date coasting vessel, is now building at the British Columbia Marine Railway Company, which is located at Esquimalt. The Canadian Pacific Railway Company have



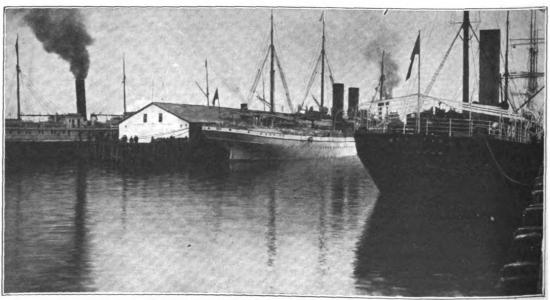


CCEAN LINERS AT OUTER HARBOR.

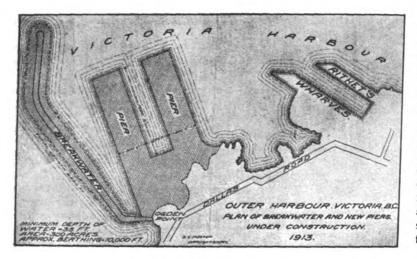
just let a contract for the construction of two steamers of 5,000 tons for the British Columbia coasting service, which has so wonderfully developed of late years. The Grand Trunk Pacific Railway Company have also found it necessary to establish docks and steamship connections at Victoria, B. C.

The opening of the Panama Canal should find Victoria in an enviable position for handling a large ocean and sea-going trade. The commencement of the bridging of the Seymour Narrows, connecting Victoria by straight rail with all of Canada and North America,

it is believed, will not be long delayed after the completion of the Canal. Middle Canadian wheat must find a Pacific outlet, and while there is no reason to believe that other ports on the Pacific Coast will not ship a certain portion of this, it is believed by shrewd observers that Victoria will be in a position to handle a very large bulk. All wheat-laden cars emptied into British bottoms at Victoria can be reloaded with lumber, the staple which the Prairie Provinces cannot grow and must have, and no car will be returned empty of freight.



SCENE AT OUTER HARBOR, VICTORIA, B. C.



Interest has been aroused in Victoria by the publication of statements by leading shipping men to the effect that it will not be possible to dock the new Princess liners which the C. P. R. is now having built in Scotland at the present Inner Harbor docks. The new liners will be nearly 400 feet long and it is surmised that the C. P. R. will shortly announce plans for a new series of docks either in the Outer Harbor or at West Bay, a body of water affected by the Canadian Northern development. The addition of the new Princess liners will give the C. P. R. a tremendous fleet of inland water vessels of the most modern and commodious

FOREIGN TRADE POSSIBILITIES OF SAN FRANCISCO

During the meeting and dinner of the Foreign Trade department of the San Francisco Chamber of Commerce, held on April 29th, a number of most interesting and eloquent addresses were delivered by both guests and members of the Chamber, which if space permitted, the Pacific Marine Review would take particular pride in reproducing in full. As it is we must content ourselves with extracts only on account of insufficient space.

Mr. P. E. Quinn, representative of the New South Wales Government, made an impressive address on the prophecy that San Francisco is not only the back door of a continent but is the front door of the greatest of the world's oceans and as the main highway of trade is ever on the sea and not on land, "Westward still the star of empire takes its course.'

Mr. Quinn unhesitatingly predicts that in the years to come the greatest trade of this port will be its trade with the Australian Commonwealth, and states:

"You have here in the United States of America a population of ninety-five millions and your trade in imports is only five times that of Australia, with less than five million. The trade per head in the United States of America is \$40—in Australia it is \$150 per inhabitant.

Of the total of \$378,000,000 imported into the Commonwealth more than 12 per cent comes from the United States, double the imports from the German-Empire—the next largest trader with Australia. The Commonwealth buys more from the United States than from Germany, Belgium, France, Italy and Japan combined. We buy from you five times the goods that we send to you. The balance of trade is largely in your favor. The principal lines taken by Australia from this country are as you know:

Apparel and textures
fish,
leather,
metal manufactures
machines and machinery
oils—kerosene and lubricating
timber
tobacco

wood manufactures
bicycles, vehicles, automobiles, etc.
Now where does your opportunity come in?
The city of San Francisco is the nearest great city
to Sydney. It is 3,000 miles nearer than New York.
It is nearly 6,000 miles nearer than London. You on

the Pacific Coast are Australia's nearest white neighbors. San Franciso is in fact, the half-way house between Sydney and London. I wish you to grasp that important fact, gentlemen, for it is the salient fact. Why, I ask you, should not the lion's share of the trade of the United States with Australia pass through the Golden Gate?

The opportunity is San Francisco's. It belongs to her mechants and manufacturers. It is theirs if only they will rise to the heights of this—absolutely the grandest opening before your city.

Australia is a great primary producer, but it buys a considerable part of the products of your farms, canneries and orchards, because our seasons interchange—your winter is our summer and vice versa. In our season of scarcity, we are glad to buy from you, and it is only natural that in your season of low production you should buy from us. If you want a good bit of beef or mutton we are always ready to sell it to you.

In Australia, vaster even in area than the United States of America, there has never been found any of the oil which you have in California, and there is an opening for a great trade with Australia in your petroleum and its residuals.

Australia, as you know, has the most magnificent hardwoods in existence, but it relies for the bulk of its supplies of softwoods on your splendid forests of Oregon and Redwood.

I firmly believe that you will gain an immense population when the Canal is finished. When your new population comes you will have the only other factor you need to make this city and its neighborhood one of the greatest manufacturing centers of the world. I I am amazed at your resources in the way of cheap and almost inexhaustible power, from oil and water. You have the unrivalled wools of Australia at your door, to blend with your own wool. Why not take charge of this industry, which is yours if you like to reach out for it.

As matters are the wool for the mills of the Eastern States should come through San Francisco. Eastern manufacturers buy Australian wool in the grease. There is no economy in paying the railroads freight on mere grease. This wool should be scoured here, and the scoured wool freighted east.

I outline thus briefly some of the advantages and some of the outstanding opportunities before San Francisco in the promotion of trade with the Australian Commonwealth.



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The sun which rises from the sea over the golden bleaches of Sydney sets in the ocean behind the Golden Gate; but it is the same ocean. I venture to say that we are the same people, with similar ideals and similar grave problems. The sea does not divide. It unites. The Pacific Coast of America can divide the empire of the Pacific Ocean with Australia, and in "the excellent years to be" this brilliant city of San Francisco is destined to be linked by golden chains of commerce with the great sister cities of Sydney and Melbourne on the opposite coast of our grand ocean.

Mr. Harve Urges Commercial Intercourse With Latin America

Mr. J. B. Havre, of Havre and Company of this city, spoke on our lacking trade relations with the republics of Latin-America, on which subject he is certainly at home. The Pacific Marine Review in years gone by, with the assistance of the efficient members of the Pan American Union, devoted much space and time to this very subject. We rejoice in this co-incidence and are proud to quote from Mr. Havre's splendid address.

"No concerted efforts have ever been made by the merchants of this port to develop its foreign trade and the efforts of enterprising individuals have not always been suitably rewarded, mainly owing to a lack of proper shipping facilities. At last we have succeeded in getting good service for our Australian trade, and the service to the West Coast of South America is fair, although occasionally we have to wait months for direct service to some of the principal ports like Guayaquil and Callao. The shipping facilities to the comparatively populous and rich East Coast of South America are practically nil.

For the development of foreign commerce, the question of transportation is a vital one, and in this respect San Francisco is lamentably deficent. With the exception of direct shipments to Europe, our activities are confined within the narrow limits of a Valparaiso and Sydney in the south, Hongkong and Manilla in the west and Alaska in the north. During by 17 years of missionary work trying to develop San Francisco's foreign trade, I have visited nearly every market under the sun and many a good opportunity went by the board for lack of transportation facilities.

I remember walking along the docks of Bombay a number of years ago and seeing piles of pine lumber being discharged from the Adriatic and the Baltic, brought there in parcel lots by direct steamer. I interested one of the largest importers and sold him a sample lot of Douglas Fir. The lumber turned out satisfactorily, but as they preferred the established custom of buying in parcel lots instead of whole cargoes, we could not compete because all our merchandise for points beyond Hongkong has to be transshipped at the latter port.

The manufacturer located in some scarcely known village on the upper reaches of the Elbe, can ship his goods at easily competitive rates (all water haul) to every market from "Greenland's icy mountains to India's coral strand," but we, located on the world's finest harbor, may not look beyond the Pacific.

The United States is becoming more and more a manufacturing country, and every year the percentage of manufactured goods that cannot be consumed at home grows larger. The bread and butter of many thousands of our people already depends on our ability to market our wares abroad, and where is there a better opportunity to obtain good markets than in the South

American countries which lies at our very door, and whose markets owing to the proximity we should con-

From the statistics I read, you have noted the tremendous purchasing power of those thinly settled countries and how fast that purchasing power is doubling and trebling. Economic developments are fully keeping pace with the increase in population and a rapid and steady growth in their trade is assured. Take Bolivia, hitherto the most backward of South American Republics. Not many years ago I had to travel over the country in stage coaches and llamas carrying 100 lbs. each and making from six to eight miles a day, carried the merchandise. Today the comfortable and efficient train service takes care of both passengers and cargo. An additional railway over the Andes from the port of Arica to La Paz and Oruro, has recently been opened to traffic. Additional lines are under construction to connect the chief cities, one to connect with the Argentine railroad system. As Bolivia is not only one of the richest mining countries in the world, but also has an immense region of great fertility to the east of the Andes, where rubber and all kinds of tropical products may be had in abundance, it can be readily seen what an immense impulse these new transportation facilities will give to its foreign commerce. San Francisco has a fine field in Bolivia, for practically everything we have for export can be sold there.

Mr. John H. Rosseter on Mexico and Central America Mr. John H. Rosseter, manager of W. R. Grace and Company, delivered an address entitled "Mexico and Central America and the Influences of the Panama Canal on the Commerce of San Francisco," a subject of no small order, which he handled with remarkable preciseness and effectiveness. We congratulate Mr. Rosseter on this dignified deliberation, from which we extract the following:

"Today, we are not doing as much business with the Central American Republics as we enjoyed 20 years ago. This can be traced directly to two points:

"decline or impairment in steamer services to San Francisco"

"improved communication by rail and water. to Gulf and Atlantic ports."

It is a sorrowful fact that the steamers serving our trade, without a single exception, are 20 years older than they were a like number of years since. Communication is slow, irregular and uncomfortable; per contra, the boats operating out of New Orleans and from New York are all modern high class freight and passenger steamers. As a result, our friends in Central American Republics, formerly in the habit of coming to San Francisco, now travel to the Carribbean and take passage to Atlantic ports and to Europe. This has unquestionably cost us a great deal of trade, as it is well established that trade follows travel.

The business we are doing in Central America is limited to staple articles which we have advantages of production offsetting the disadvantages of freighting.

However, we have also a trade in a broader line with cities situated on the western or Pacific slope of This is due to the fact that ship-Central America. ments from Carribean ports must be trans-shipped from what are generally known as the northern line of railways to the Pacific lines, at the capitals of Guatemala and Costa Rica, to reach the cities along the Pa-



cific or on the Pacific slope. This is a tax in time and money to our benefit in competition.

It has been argued that after opening of the Canal, we will lose this business to direct shipments from Atlantic ports, going through the new water-way. Unless we prepare to meet changes in conditions there is no doubt we will lose trade now coming here. The question revolves on how the commerce will be handled, with respect to the voyage and the size of the vessel and what we will do to assist steamers in the way of facilities and economics.

The proposition is that a steamer passing through the Canal and touching at various ports in Central America, of necessity must be a small craft. Modern steamers are too costly to suffer delays at small ports.

The operation of a large modern steamer as compared with the smaller carrier, means a very much lower rate per ton. Thus, articles of staple production can be landed at San Francisco at a lower freight rate than at ports in Central America, notwithstanding that the latter ports are barely more than half or actually less than half the distance from port of shipment.

The measure of this economy in freight is uncertain. I venture the opinion it will be sufficient to cover the freight back to Central America. That may sound extravagent, still it can be demonstrated by figures, and you know figues don't lie.

However, there are other considerations entering into the question. The large steamers on passing through the Canal will find the very best facilities at Balboat to land, store and trans-ship cargo. This will facilitate a service to Central American ports by small boats operating from Panama. Such a line is today operating in and out of Salina Cruz to ports as far south as Corinto.

It remains to be seen what is to be done in the way of encouraging steamers to operate in that trade out of San Francisc. We have important advantages on our side, notably, the supply of fuel and the support of passenger traffic.

Generally, and in the broad sense, the advantages alforded by the Canal will operate in our favor in all trades, from the fact that we have the opportunity of fostering a great commerce, resting on facilities we gain by the Canal and our great natural advantages. The history of our commerce, from the settlement of the city to the day of the opening of the Canal, is one of high freight rates, by land and sea, on all materials.

Contrast on the one hand a voyage of over 13,000 miles via Magellan with that of 5,000 miles by the Canal. Probably nothing brings this difference so strongly to mind as the fact that two steamers now under construction at Philadelphia will make the veyage from New York to San Francisco in 101-2 days. It is not so long since that the Overland journey by rail meant 7 days. Of course, only fast passenger ships, the greyhounds of the Pacific, will make the voyage via Panama under two weeks, while the modern cargo boat will do it in 17 to 20 days, according to size and power.

Aside from the mere question of speed there will be, and more important, the econrmous economy in carriage of goods by sea, to be reflected directly in the rate of freight.

Give to the ships quick dispatch and low charges, to our merchants the facility of economic handling and of trans-shipments and this port will become the mart of the Pacific. Immigration and travel will be a powerful influence in the support of steamer communication.

At the same time, those considerations will be operating to increase the population and the prosperity of the state and of the Pacific Coast. When I say Pacific Coast, it is not merely the Pacific states, but likewise Alaska, Hawaii, British Columbia, the west coast of Mexico and the Central American Republics.

We are facing the situation that in years past confronted the merchants of old trading towns in Europe, such as Glasgow, where they had to burden themselves with an enormous debt that deep draft ships might be brought to their wharves; or to Manchester, confronted with the heart-breaking problem of constructing a canal and then to build steamers that would use it and bring cotton and other materials to their malls; or to Hamburg and Bremen whose enterprise in constructing waterways and great fleets of ships may evolk the admiration of all who know.

No longer can we rely on our natural advantages. We must organize to study every move in the game that is about to open and hold all the pawns and trades we can garner.

These are problems with which the Department of Foreign Trade has been struggling and unselfish and liberal support should be accorded by all.

Trade With Europe as Viewed by Mr. McNear

Mr. J. W. McNear, of this city, in his address on "Trade with Europe," urges that we heed the all essentiality we are gradually awakening and just commencing to accomplish that which has been so badly needed during the years of indifference, but which now must become of the past. Mr. McNear said:

"Europe needs our products, and providing we can land our commodities in European ports at moderate prices the trade must and will increase tremendously, particularly on the completion of the Panama Canal, which will secure us more direct and cheaper transportation.

Are we prepared for this development?

Have we dock and warehouse room sufficient for our needs, where vessels can be economically loaded and discharged with dispatch and their cargoes quickly disposed of?

It is admitted that we have one of the finest harbors in the world, but it must also be admitted that our present facilities for loading and discharging vessels are inadequate and unnecessarily expensive.

Are we taking the proper steps to insure an improvement of these conditions?

We have seen the commerce of great ports decline through the indifference or neglect or fancied security of their people giving way to more ambitious, aggressive communities whose ports were far inferior in natural advantages to theirs.

Have we fellowed the developments of such great ports as Rotterdam and Manchester, both of them located thirty to forty miles inland, where by the wise expenditure of vast sums of money, modern docks with ample draft of water have been provided; where the largest ocean going steamers can be loaded and discharged with the utmost expedition and economy?

Comparing Rotterdam, for instance, with San Francisco, tonnage figures for San Francisco, exclusive of coast-wise, bay and river trade, are:

Vessels entered at Rotterdam for the same period have 10,658,831 net reg. tons, with a carrying capacity of nearly 18,000,000 tons.

Vessels at Rotterdam may be always sure of a berth



and are loaded and discharged in one-third of the time occupied here and at one-third of the cost.

As to the cost, it is admitted that our labor receives higher pay here than in European ports, but this by no means is the sole reason for the difference.

Our trouble is that our docks are not sufficient in number, nor are they constructed or equipped in a way to insure quick dispatch and economy in loading and discharging.

This is not intended as a criticism of the present Board of Harbor Commissioners, for I believe these gentlemen are conscientiously and intelligently endeavoring to improve dock conditions here.

The present docks under construction meet the conditions to a degree, but there are not enough of them; from what I have seen of the facilities at the other ports referred to, that is Rotterdam and Manchester, I believe the type could be very much improved upon and I also believe that more consideration should be given the installation of equipment to reduce the cost of loading and discharging at this port.

Electric power equipment is today recognized as most satisfactory and economical.

Such power is obtainable here at as low cost as it can be delivered at either Rotterdam or Manchester—why, then, not make more use of it?

Another thing, if we expect Europe to take the products of our farms and packing houses they must have return cargoes for the vessels engaged in this traffic.

Many of us are protectionists because we are affiliated with the political party committed to this policy, or because we believe our interests in this state require it.

I believe today that our agriculturists have little to fear from free trade, with the exception perhaps of our beet sugar industry, and we are not in a strong sense a manufacturing community. What a stimulus would be given our development if the commodities we require and which cannot be economically produced could be imported free of duty. I refer particularly to steel and iron products.

What effect will the completion of the Canal have on transcontinental rates? What will be the attitude of our great western railroads?

It seems extremely unlikely that the railroads can or will attempt to compete with the water lines. Transcontinental rates will be modified, perhaps abandoned. The traffic manager will give more attention to the development of the interior territory tributary to their lines, and perhaps will also readjust rates on the commodities this interior territory requires, permitting a larger movement through Pacific Coast ports.

Under such conditions this port would become the distributing center for a very large territory, and we would develop and prosper as never before.

In conclusion I wish to add, if we are to increase our trade with Europe we must study their markets and meet their requirements as to the quality of our goods, packing, labels, etc., and improve our facilities for handling traffic, and above all join hands and pull together, putting aside all petty jealousies.

Mr. Wm. Hammer, of this city, dwelling on the fire protection of San Francisco's wharves, said:

"It is the intention of the Fire Commissioners to install at once two additional motor-driven tenders of the same hose-carrying capacity as the present one, to be located, one in the vicinity of Twentieth and Ken-

tucky streets, to give additional fire protection to such manufacturing plants as the Union Iron Works, Sugar Refinery, California Barrel Works and other enterprises in that section of the city. The other will be placed at Lombard-Street Wharf, with the Fire Boat David Scannel.

"In the new budget just placed before the finance committee of the Board of Supervisors, the Fire Commission have asked for an appropriation of \$372,000 for additional motor-driven apparatus."

BLUE FUNNEL LINE'S INTERMEDIATE SERVICE

Relative to the recent announcement made by the press with reference to the Blue Funnel Line establishing a fortnightly instead of a monthly service as heretofore, between the ports of Puget Sound via the Orient and Liverpool, we have received the following, dated May 30, 1913:

"Replying to your favor May 26, we have no details or information to give out with respect to the rumored intermediate service of the Blue Funnel's between Puget Sound and the Orient.

"The S. S. 'Ajax' left Hongkong on May 30, eastward bound. This vessel is to sail westward from Puget Sound July 12, and will be permanently operated between Puget Sound and Hongkong via Japan and Shanghai.

Whether this intermediate service will be inaugurated by the addition of further steamers to be operated with the "Ajax" remains to be seen. Yours faithfully, DODWELL & COMPANY, LTD.

(Signed) H. F. HAINES, General Freight Agent.

INTERESTING RETURNS FROM TEHUANTEPEC NATIONAL RAILWAY COMPANY

During the year 1912 the interoceanic traffic handled by the Tehuantepec National Railway Company amounted, in round numbers, to one million metric tons, a satisfactory increase over the previous year. Attention is directed to the fact that the local import and export traffic is not included in the above lonnage, this traffic also showing a satisfactory increase over the previous year.

For the first three months of 1913 the movement of through interoceanic traffic shows a healthy growth as compared with the same period of the year 1912.

The entrance channel to the drydock at Salina Cruz is now being deepened to a minimum of ten meters at low tide. This will enable the largest vessels now operating on the Pacific Coast to enter this drydock for repairs.

At Puerto, Mexico, two new warehouses are being constructed of corrugated iron and reinforced concrete, 126 meters long by 32.52 meters wide, with holding capacity of 10,000 tons of freight each. With these two new warehouses the Tehuantepec National Railway Company will have nine warehouses of the same dimensions and capacity at their Atlantic terminus.

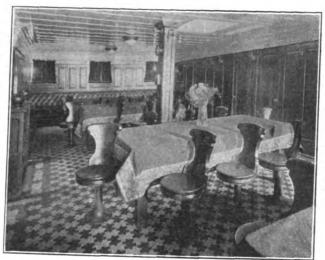
The Western Fuel Company recently struck a 10-foot seam of clean, high-quality coal at their reserve mine at the mouth of the Nanaimo River, in British Columbia. For two years the work of drilling has been in progress.



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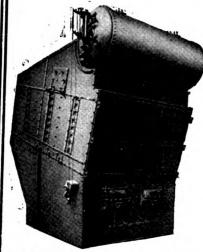
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TEST CASE BROUGHT AGAINST S.S. "CITY OF SEATTLE"

Captain John K. Bulger, Supervising Inspector for this Coast of the United States Steamboat Inspection Service, is now in Seattle in connection with the case of the S. S. "City of Seattle," which vessel is supposed to have violated the new law as to the number of licensed mates required.

The "City of Scattle" investigation was a test case brought by the Masters, Mates and Pilots' Association, which alleged that the master of the "City of Scattle" on a voyage to Alaska compelled two mates to stand watches of twelve hours each. The steamship's officers testified that under a special arrangement the two mates in question did not handle any cargo and devoted their entire attention to piloting the vessel through the inside passage.

The local inspectors, after an investigation, failed to find that the master of the "City of Seattle" had violated any law. Nevertheless they transferred the case to the Collector of Customs. Captain Bulger stated that no appeal had been taken to him from the decision of the local board and that he would not interfere with its ruling.

ADJUSTMENT OF GENERAL AVERAGE

Proposed Alteration in Rules of Practice

That many of the customs prevailing in the United States regarding allowances in General Average for sacrifices incurred for the general benefit, and also in regard to other matters touching the adjustment of General Average, have not the semblance of equity, which is the end sought, has long been recognized, and that many abortive attempts have been made to remedy the situation without success is well known, and any influential attempt making for equity and uniformity will be welcomed by all interested—ship owners, cargo owners and underwriters.

The Association of Average Adjusters of the United States, which organization has for its active members the leading adjusters of the country and for associate members many of the leading underwriters, has recently propounded two rules of practice which, while a decided departure from the practices hertofore prevailing, will undoubtedly result to the advantage of all concerned and will be conducive in putting an end to much friction that now arises.

All of the maritime countries of the world have laws as to the adjustment of and the liabilities under general average. That the laws of one country conflict with those of other countries is a matter of course. Some quesions pertaining to over-sea carriage are adjusted by the law of the place of contract, others are adjusted according to the law of the flag of the carrier, while general average, unless otherwise specified in the contract of carriage, is to be adjusted according to the law of the port of destination or of termination of the venture. Therefore an exporter, in order to be fully conversant with what his liability may be, should be versed in the laws regarding the adjustment of general average prevailing in any port to which he is making shipments.

Many attempts have been made to arrive, by agreement, at uniformity, and the latest of these, the York-Antwerp Rules of 1890, have by far been the most successful. These rules are a compromise between the laws and customs of the various nations, and while they do not deal with all questions arising under the adjustment of general average, yet they deal with the principal ones. In most contracts of carriage oversea it is stipulated that general average shall be adjusted according to these rules. In contracts for coastwise carriage, however, this stimpulation is omitted, leaving the adjustment to be made according to the custom of the port of destination.

Allowance for Sacrifice of Ship's Equipment

The customs now prevailing in the United States are the outgrowth of times when carriage by sea was all in wooden bottoms and when, to avoid trouble, certain hit or miss rules were adopted. For instance, if it was necessary for the general safety with a ship in stress to cut away a mast with the attached rigging and spars this was admitted to be a sacrifice for which the cargo must bear its proportion. But as to what extent the mast and rigging was to be allowed for in the general average was a question which gave rise to many difficulties. If the ship was a new one then, to conform to the idea of equity, it would appear that the owner should be reimbursed for the entire cost of a new mast and rigging. If the ship and rigging were old and partly worn out, then to reimburse the owner for the entire cost would be to place him in a better position than he was before the sacrifice-a manifest inequity, for he would then have, without expense, a new part to his ship which, without the sacrifice, he would have had to replace in a short time, through wear and tear, at his own expense. To overcome this difficulty, the "rule of thumb" prac-



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tice was inaugurated of deducting one-third from the cost of repairs as a commutation for the difference between new and old. While the old ship would benefit by this rule and the new ship would suffer, yet it was considered that in the long run the equalities would be preserved. Included in this rule of onethird off was the cost of incidentals, such as towage, use of shears and tools, etc., all of which entered into the cost of repairs yet of themselves did not constitute a part of that benefit for which the owner was mulcted to the extent of one-third.

With the passing of the wooden ship and the advent of the iron ship the situation materially changed, but the rule for the allowance of sacrifices remains the same. With the iron ship the calculation as to its length of life can be made fairly accurately and therefore any benefit to the shipowner by the replacement of new for old material can be fairly well estimated. Certain parts of the ship, particularly machinery in the case of a steamer, must be replaced frequently, consequently a rule that may be applied to the hull, which under ordinary circumstances suffers a gradual deterioration, cannot be applied to other parts which wear out quickly. With a view to arriving at greater equity for all concerned the conference promulgating the York-Antwerp Rules of 1890 adopted a graduated

scale for allowances and the same scale has been adopted by the Association of Average Adjusters of the United States as a rule of practice. This scale is as follows:

Contributory Value of Freight

The other proposed Rule of Practice is with regard to the contributory value of the ship's earnings for the voyage. It is well known that values ultimately saved to the various parties to the venture contribute to any sacrifice made to effect the saving. With ship and cargo this amount is readily arrived at, but in the case of freight it has been different. Here again we see variety with the various countries, and in the United States different rules prevail in the different The question is to arrive at what the shipstates. owner has saved in the way of freight by reason of a general average act averting a total loss. The net profits to freight are naturally the gross freight less the expenses of earning it, such as port charges out of the port of loading, provisions and fuel for the voyage, wages of the crew and the port charges at the port of destination including the cost of discharging the cargo. The cost of provisions and fuel and the outward port charges have been paid or are liabilities prior to the act of sacrifice. In case of wreck or total loss the shipowner is liable for the wages of the crew up to that XIII.

Allowance in General Average for Repairs to Vessels

Deductions, new for old, from cost of repairs and/or renewals of vessel's damages and/or losses allowable in general average shall be made according to the following scale:

RULE

On Iron or Steel Vessels	Between 1 & 3		0.040	4004	Over
Woodmands C. L. H. J. J.	years old			10 & 15	
Woodwork of hull and equipment		1/3	1/3	1/3	1/3
Woodwork of masts and spars		1/3	1/3	1/3	1/3
Furniture		1/3	1/3	1/3	1/3
Upholstery	. 1/3	1/3	1/3	1,3	1./3
Crockery	. 1/3	1/3	1/3	1/3	1/3
Metal and glassware	. 1/3	1/3	1/3	1/3	1/3
Sails, awnings, tarpaulins and covers		1/3	1/3	1/3	1/3
Rigging (other than wire)		1/3	1/3	1/3	1/3
Ropes, sheets and hawsers (other than wire and chain)		1/3	1/3	1/3	1/3
Painting (including painting bottom when allowable under Rule VIII) 1/3	1/3	1/3	1/3	1/3
Dunnage, shifting boards, etc	. 1/3	1/3	1/3	1/3	1/3
Wire rigging	. 1/6	1/6	1/3	1/3	1/3
Wire repes and wire hawsers	. 1/6	1/6	1/3	1/3	1/3
Chain cables	1/6	1/6	1/6	1/6	1/6
Donkey engines	1/6	1/6	1/3	1/3	1/3
Steam winches, windlasses, cranes and connections	1/6	1/6	1/3	1/3	1/3
Iron work of hull	none	none	none	1/6	1/3
Cementing	none	none	none	1/6	1/3
Iron work of masts and spars	none	1/6	1/3	1/3	1/3
Machinery (inclusive of boilers and their mountings)	none	1/6	1/3	1/3	1/3
Sanitary pumps and plumbing	none	1/6	1/3	1/3	1/3
Dynamo, electric plant and wiring	none	1/6	1/3	1/3	1/3
Refrigerating machinery	none	1/6	1/3	1/3	1/3
Refrigerating insulation	1/3	1/3	1/3	1/3	1/3
Dock dues, expenses of removals in port, cartages, use of shears, stages			=	_ •	-, 0
and graving dock materials	none	none	none	none	none
Anchors		none		-	none



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time. In case of total loss of the ship there is, of course, a total loss of the freight, but the expenses mentioned above must be met, and therefore the amount saved in the way of freight is not the gross freight less all of the expenses of earning it, but the gross freight less the expenses incurred in earning it after the general average act, expenses for which the owner would not have been liable had the vessel been a total loss.

Applying the hit-or-miss policy and probably to avoid trouble in calculation, in some of the states it is customary to assess the freight in general average on one-half of the gross freight and in other states on twothirds of the gross freight With such customs it is immaterial whether the general average act or sacrifice is made near the port of departure, when the expenses incurred have been comparatively small, or near the port of destination, when the expenses have been largely increased by reason of liability for wages, the freight will contribute on the same amount.

The proposed rule, which again follows the deliberations which resulted in the promulgation of the York-Antwerp Rules, is as follows:

PROBATIONARY RULE XIV.

FREIGHT—CONTRIBUTORY VALUE AND AMOUNT MADE GOOD IN GENERAL AVERAGE.

The contributory value of freight shall be taken at the amount at risk and earned on cargo on board, from which shall be deducted the expenses (except those allowed in general average) incurred to earn it after the date of the general average act or sacrifice; and when loss of freight is allowed in general average the allowance shall be for the net freight lost, to be ascertained by deducting from the gross freight sacrificed the expenses in respect of same that would have been incurred, subsequent to the sacrifice, to earn it, and such allowance shall contribute to the general average.

While in many adjudicated cases the courts have sanctioned the application of the old rules, they have done so merely because they were the custom and in no case have they decided that the rules were the law. In fact in some cases the courts have decried the customs. That being the case, there is no reason why these proposed Rules of Practice of the Association of Average Adjusters should not be adopted.

Apart altogether from its large appropriation for new terminals in Victoria, B. C., the Canadian Pacific Railway Company will expend \$1,500,000 on the extension of its lines on Vancouver Island this year. This announcement, made tentatively several days ago, is now confirmed.

WRECKS, CASUALTIES AND MISCELLANEOUS REPORTS

"Chiyo Maru," Jap. Str. From San Francisco Apr. 19th for Yokohama grounded off Shimonoseki but was floated and proceeded. Repairs will be made at Hong Kong. Extent of damage not reported.

"Elizabeth," Str. From San Francisco May 10th for Bandon returned to San Francisco May 11th, having lost a blade from the propeller.

"Fair Oaks," Str. The Grays Harbor Tugboat Co. has been awarded \$8,000 salvage for towing this steamer from outside the jetty at the entrance into Grays Harbor. The steamer struck the bar several times and was in danger of becoming a total loss.

Geo. E. Billing," Schr... From Astoria Mch. 11th with lumber for Sydney went ashore May 14th in Botany Bay. She was later floated and arrived at Sydney May 20th, apparently but little damaged.

"Lyman D. Foster," Schr. From Bellingham for Levuka, previously reported abandoned at sea, picked up and taken to Suva, had met with a typhoon during which she was dismasted and part of the deck load was carried away. She was strained and leaking badly and was towed into port with much difficulty.

'Northwestern," Str. This steamer was recently placed in drydock at Seattle when it was found that she had suffered considerable bottom damage, apparently caused by grounding at Valdez, Alaska, in Jan. last, during a gale. Estimated cost of repairs about \$10,000.

'Lord Derby," Br. Str. Previously reported as being damaged by striking a rock in Rosario Straits, has practically completed her repairs at Esquimalt and will begin reloading her cargo shortly.

Oakland," Schr. From Siuslaw May 11th for San Francisco went ashore at the mouth of the Siuslaw River while proceeding out in tow. After jettisoning the deckload the vessel was floated apparently undamaged.

"Prince Albert," Br. Str. From Seattle May 21st for Prince Rupert went ashore at Pt. Simpson, but was later assisted off. Damage, if any, unknown.

"William Chatham," Str. While backing out of the dock at Seattle on May 15th struck a submerged object, damaging the rudder, stock and propeller. Cost of repairs estimated at about \$8,000.

"Workman," Br. Str. The master of this steamer, which was totally lost in Dec. last while on a voyage from San Francisco for London, has been severely criticized by the Naval Court of Inquiry for lack of care in the navigation of the steamer.



CORRECTIONS OF LOG BOOKS

It is well known that too often entries made in log books of vessels are subsequently added to or altered in order to attempt to fit or justify conditions that subsequently appear. Unless the log books are produced in court as evidence this action on the part of the responsible officer escapes detection and, in fact, it is frequently of no real importance; but attempted alterations are never justifiable. Entries should be made with care and if subsequent discoveries justify an addition this should be made and clearly stated as explanatory.

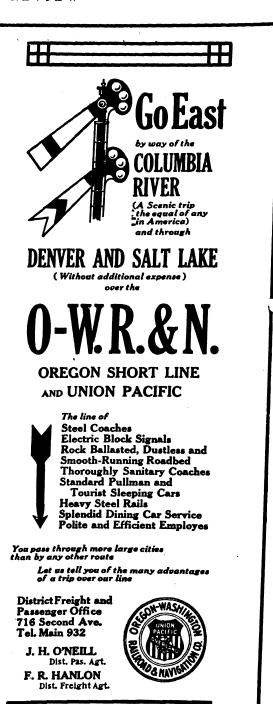
This question received the attention of the Admiralty Division in the case of collision between the steamers "Oceano" and "Merion" in the Delaware River. The "Merion" was found to be at fault, but it was attempted to throw part of the burden on the "Oceano" for the reason that the entries in the mate's log were not strictly in accord with the evidence pro-

In commenting on this latter phase of the matter the Shipping Gazette Weekly Summary has the following:

Then came a question whether the "Oceano" ought to be also held to blame for not reversing her engines in time. The log of the "Oceano" seems to have been relied upon as stating that the engines of the "Occano" were not stopped until some time later than they should have been. The log was written by the mate, and the master explained away its effect by stating that although everything stated in the log was done, the order of events was not correctly given, and that he called the attention of the chief officer to this before signing the log. The court believed him and exonerated the "Oceano."

Attention should be drawn to this, as showing how much safer it is not to correct a log once written up than to make any attempt to correct the log by altering it. An altered log may make a very bad impression upon the court. It is much safer to leave the statement to be explained. It is not, of course, necessary or desirable for a master to sign without comment a statement with which he does not agree. He should certainly point out anything he considers incorrect. The safest course would probably be to add and sign his own statement of the facts, but the main point is that he should not make any attempt to alter the statement as made by the officer whose duty it has been to write up the log. The court is much more likely to suspect a corrected log than to rely upon an incorrect log, stated to be incorrect.

The judge stated in his judgment that the master "perfectly honestly allowed the chief officer to put down his own impression in the order he thought right, and did not attempt to make him alter it. He signed the log at the time, and called the chief officer's attention to the fact that the order of events was not properly stated." Taking this view, the judge declined to allow the entry in the log to over-ride the other evidence. We are not suggesting that it is the best course to sign a statement in a log which is considered to be incorrect with only a verbal objection. But we certainly do recommend that no attempt should be made to alter the log. It is quite easy to note in the log the correction which is considered to give the proper version of the facts.



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Considerable interest has been aroused by a recent decision in the English Courts, Admiralty Division, awarding to the commander and crew of a British warship salvage remuneration for services rendered to a steamer ashore. The digest of this decision, given below and which is copied from "Fairplay," reaches us too late for comment but will have attention in our next issue:

Salvage.—The Demira (s.).—Admiralty Division, May 9.—This action was brought by the commander, officers and crew of H. M. S. "Melpomene" to recover for salvage services rendered to the S. S. "Domira" in the Gulf of Mexico in May last year. The "Domira" was valued at £17,000. She was bound from Philadelphia to Vera Cruz with coal, and on May 6 stranded on the Alacran Reef. On May 13 the commander of the "Melpomene," then lying at Puerto Mexico, was informed by the British Vice-Consul of the "Domira's" position and went to her assistance. The cruiser arrived off the Alacran Reef on May 16, and it was found that the "Domira" was hard and fast on the rocks and had her forepeak and No. 1 hold full of water and was leaking in holds Nos. 3, 4 and 5. The "Melpomene's" crew were engaged to jettison the coal cargo, some 1,200 tons having been taken out of her before attempts were made to tow the vessel off. At about 5:30 A. M. on May 19 the vessel was towed into the deep water by the "Melpomene" and the vessel repaired, leaving on May 24. In the course of the case it was pointed out that a quarter of a century has passed since a British warship has claimed for salvage services. Sir Francis Evans, in giving judgment, said that it was clear that no remuneration could be given in respect of the value of the salving cruiser, and therefore the question to be decided was as to what was the fair remuneration for the work done by the commander, officers and crew, outside their ordinary duties. He thought he was entitled to take into account the fact that the commander was running some risk of incurring possible disfavor with the Admiralty. The work was done readily, efficiently and skilfully. There had been great risk of total loss and the services were, in his opinion, entitled to a considerable award. He awarded £2,500.

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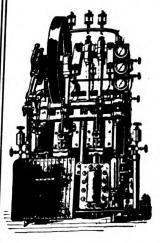
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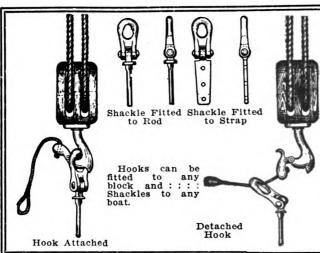
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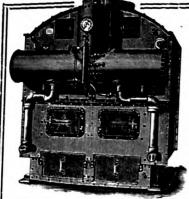
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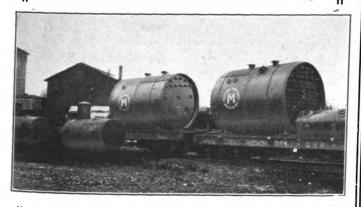
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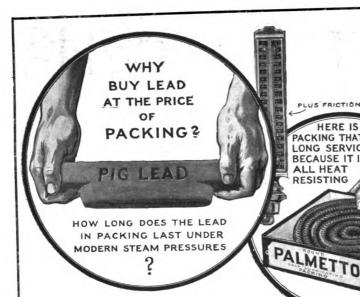
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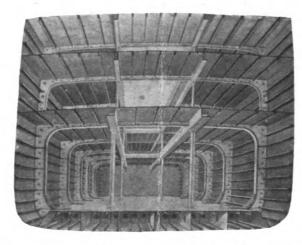
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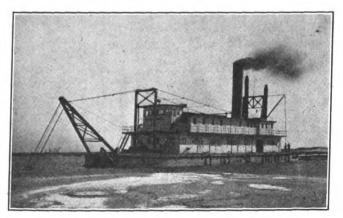
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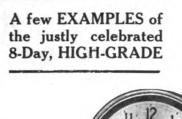
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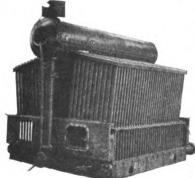
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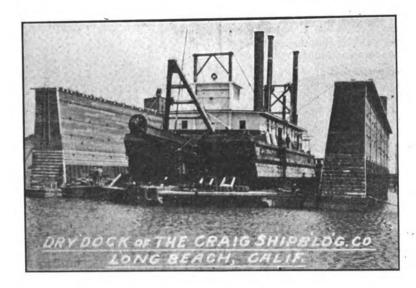
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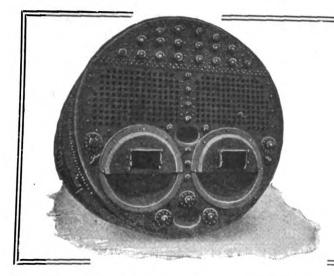
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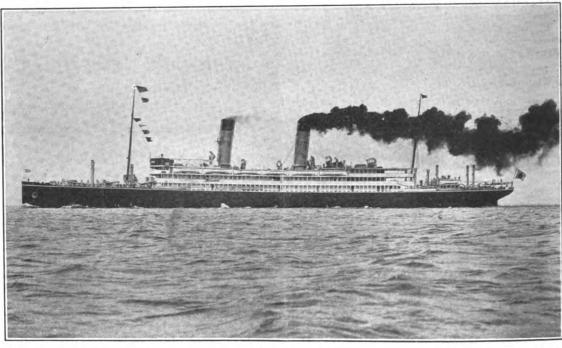
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THE UNIFICATION OF MARITIME LAW

This pre-eminent problem in which every maritime nation is deeply interested and vitally concerned naturally calls for an international solution. It will be dealt with in comprehensive detail as well as in its full magnitude during the assemblage of technical committees of all maritime powers which will constitute the all-important maritime conference held during the early autumn in Great Britain's capital, London.

Technical committees consisting of the most competent men have been making painstaking studies for this purpose in Great Britain, Germany, France, Austria, Italy, Norway, Spain, Holland, Sweden, Greece, The United States of America is not lacking and, as I understand, the Secretary of Commerce is organizing a committee which will include representatives of the American Society of Naval Architects and Marine Engineers, the American Society of Naval Engineers and the technical schools which offer instruction in naval architecture and marine engineering. The principal companies building ocean passenger steamers are requested by the Secretary of Commerce to suggest names of those most competent to express the views of shipbuilders on this subject. The American passenger ship owners on the Atlantic and on the Pacific have been asked to name those most competent to express their views. The Lake Carriers' Association is invited to suggest a name that will carry authority throughout the marine interests of the Great Lakes. The maritime exchanges and chambers of commerce of New York, Boston, Philadelphia, San Francisco, Portland, Oregon, and Seattle have been requested to propose captains of trans-Atlantic and trans-Pacific ocean passenger steamers, respectively, in active service or retired, to serve on the committee. It is expected that American shipowners on the Atlantic and Pacific will also agree upon representatives to voice their sentiments on the many subjects involved.

It may thus be justly prognosticated that with such representative body, the American nation will be fully guarded against any freak proposals made a year ago before the exalted body of the United States Senate. One member of the Senate recommended the regulation of ocean navigation on railroad principles, the carrying of buoys on shipboard to mark the burial ground of ocean steamers, and he thought that passengers could be saved in watertight compartments. However,

"A man must serve apprentice to every trade Save, critics; they are already made."

Not even a "Cary" is thought of to serve on this committee, although the Hon. Wm. J. pretends to know all about bulkheads, but "The Helmsman to the wheel and the Cook to the foresheet."

The following sage prophecy of the late Sir William H. White is most significant and will unquestionably receive careful attention during this conference: "When calmer consideration of the subject becomes possible, it will be seen that the question of boat equipment, important as it undoubtedly is, must be treated as subordinate to that of efficient watertight subdivision. Possibly the time is approaching when shipowners will concur in action by which such subdivision shall be made the subject of legislation on lines to be agreed upon by the board of trade and themselves.

"In view of experience gained in connection with

Mr. James French......51

legislation for the load line of merchants ships (which the Pacific Marine Review has for so long advocated for adoption under our flag), it is permissible to hope that if such action is taken it may be of an international character, and that arrangement would undoubtedly be most advantageous if it could be made."

And eventually it will be made.

This all paramount subject of ship construction of the present and the future, with which the classification and loadline of vessels is so intimately and imperatively connected for the desired absolute safety, safety in spite of the possible fallibility of human judgment which cannot and should not be entirely eliminated, is unquestionably a problem which requires the best brains of any country to discuss intelligently.

Radiotelegraphy, efficiency of officers and crew, aids and perils of navigation, lifeboats, davits and fire protection are some of the subjects which will follow in rotation and, I trust, for unification in law. How seriously the continental nations of Europe have taken to the idea of such unification has recently been proven at the well attended Maritime Law Conference at Copenhagen, where the law of affreightment and the insurance of enemy goods were discussed, and while the latter subject may not be finally agreed upon before 1915, the evidence favoring international maritime law of the future is stronger than anticipated.

Quite apart from the London conference, there will be held next fall an International Conference on the Unification of Maritime Laws at Brussels, during which the question of liability of shipowners will be discussed. This problem of limitation of the liability of shipowners has taken large proportions in the minds of men here and abroad. In view of its increased importance, the United States will be represented by men in possession of the highest legal attainments, consisting of the Hon. Henry Galbraith Ward, United States Circuit Judge of New York; the Hon. A. Y. Montague, of Richmond, Va.; Edwin W. Smith, Esq., of Pittsburg, Pa., and George Denegre, Esq., of New Orleans.

There can be little doubt of the advantage to be gained by the creation of a real universal maritime code. The continental nations of Europe earnestly desire to call one into existence, and the United States should not hesitate to assist. The large merchant marine of Great Britain, the general respect for her shipping laws and the admiration universally held for the administration of her Admiralty Court, would give the British shipowners and underwriters the greatest influence if they would seriously exert themselves in carrying through the project of uniform maritime laws. This would undoubtedly become of incalculable value to the entire shipping world.

While our own existing rules relative to the carriage of lifeboats have in the past been considered superior to those of Great Britain, it is nevertheless a well known and acknowledged fact that our navigation laws from almost every other aspect are much inferior to those of other nations. Obsolete and beyond redemption are these laws of ours. Our navigation code found its birthplace in the days of Solomon, and since then its cradle has remained unattended. But there is hope, and if we successfully unify with other nations there will be a glorious resurrection.

I sincerely trust that some member of the United States committee will, with the permission of the Secretary of Commerce and the Secretary of State,

propose the unification of the law for the measurement of vessels in the most adaptable way to solve a problem which in connection with the Panama Canal will become of intrinsic value. We have fixed the tolls at \$1.20 per ton on merchants vessels carrying cargoes through the Canal, but on what measurement? Presumably American; but no one has yet been informed. There exists the British, the American and the Danube measurement, the latter of which is in use on the Suez Canal. Let us adapt an international measurement for the use of the world's great inter-oceanic highway in favor of every flag and every trade.

THE U. S. CUSTOMS SERVICE ON THE PACIFIC

Among the many changes which will take place on the Pacific Coast with the opening of the Panama Canal, no change from a commercial point of view, and to a certain extent from a shipping point of view, is more essential than the improvement of the United States Customs Service.

It is a very well-known fact that New York is the distributing center for the finer classes of European merchandise for the entire United States and therefore has, and necessarily so, a very excellent organization in the Customs Service. In order that the Pacific Coast may be properly benefited by the diversion of goods from European countries via the Panama Canal to San Francisco, as the future distributing center on this Coast, it becomes imperative that we should look in the future and make preparations for an organization which can take care of such diversion of foreign importation.

In the study of this important subject, considerable information has been gathered. I find that while our merchants are strongly inclined to order their goods via the Canal, as the freights will be cheaper and the time of transit quicker, they are hesitating, owing to the fact that San Francisco has not a properly qualified staff of appraisers at its disposal.

The many different classes of merchandise thus diverted from New York and brought from Europe via the Panama Canal in the future require very technical knowledge in order that they may be properly valued for customs duties. Such materials as linens, laces, woolens, cloth, cotton goods, clothing, wines and innumberable other articles which, after the Canal is open, should all come direct to San Francisco by water, will unquestionably continue to be distributed from New York unless qualified appraisers are installed here.

If the essential number of qualified appraisers are installed at this port, the merchants will carry large stocks in San Francisco and make this city "the distributing center," which it is destined to become as far east as Denver. This is a bright and promising feature and one of the many advantages of this port as the New York of the Pacific.

Many representatives of large foreign steamship lines which have long since made preparations and are here to study shipping conditions with a view to extending their old established routes and creating new ventures via the Panama Canal, justly consider this matter of vital importance both from a shipping as well as a shipper's point of view.

I wonder whether our Treasury Department is now training the necessary number of appraisers to qualify for the requirements of the future. If not, they may find it difficult to draw on New York for a supply



which will prove advantageous to this Coast in time of need, as the East will unquestionably continue to be in want of the number of appraisers stationed at the metropolis of the Atlantic.

THE U.S. IMMIGRATION SERVICE

The Hon. Anthony J. Caminetti has succeeded one Hon. Daniel J. Keefe as Commissioner-General of Immigration, under whose administration this important branch of the Government has not been conducted as it should have been.

While it is true that the ports on the Pacific have suffered perhaps less vividly than those of the Atlantic seaboard during the astonishingly extended period of service of the ex-Commissioner-General of Immigration, it certainly is not due to the latter's business principle as an executive, but solely to the limited number of white immigrants who in the past have immigrated to this Coast. Space does not permit us to dwell on the manner in which some of the Oriental influx is handled. "Fairplay," a monthly review published in New York, states in its June issue:

"Lately in the enforcement of our immigration laws, there has been too much playing to the galleries, and it is regrettable that there are so many men of the Keefe type in the immigration service, namely, semi-illiterates and bullies who enjoy themselves by treating incoming aliens worse than cattle.

"Many immigration officials are labor union men, which by no means should be construed as detrimental to the service; but some of them believe that they have a sacred duty to perform by keeping out as many alien laborers as possible, and if perchance they cannot have the alien deported, they at least find satisfaction in harrassing him as much as possible; they detain him on flimsy pretexts, make him a quasi prisoner, and are instrumental in making his relatives lose time, spend money and, in many instances, cause the most terrible anguish and sufferings to the immigrant and his relatives."

This is only too sadly true!

The newly-appointed Commissioner-General is considered a man of broad views, who, we have all reason to believe, will see that the immigration laws are administered without fear or favor on clean and honest business principles. We sincerely trust when the time arrives that our Coast is favored with the desired large influx of immigration, the class of immigrant we need and the alien we shall be glad to welcome to our shores, that the number of immigration officers will not be lacking and will be void of the bully of the Keefe type.

Mr. Caminetti, a former State Senator of California, knows this Coast, is aware of its future and will unquestionably give the Pacific States an immigration service which will leave nothing to be desired in point of treatment of the individual immigrant and in facilities favorable to the shipping interests.

Another point in this connection is that, not only in San Francisco but other Coast ports, the large number of immigrants which can be brought via the Canal will require far more up-to-date arrangements for their examination than any port on the Coast has at present. In other words, what is wanted in a large port like San Francisco is an Ellis Island, New York, on a small scale.

A DESPERATE BUT VAIN EFFORT

We congratulate the people of Seattle on the uncommon common sense they displayed during the special election on June 17 when matters pertaining to the Port District and the number of Commissioners to be maintained in the future were decided upon.

The harbor pirates, consisting of men representing dominating corporations and specially and selfishly interested individuals, have struggled in vain to the last, trying, as it were, to create a tornado of sand to blind the eyes of the people—but it has all come to naught.

We delight in the recommendation and prognostication made in our June issue with regard to the Seattle Port Election. The voter has now decided, the controversy is settled, the port is to be controlled by the people and the number of commissioners, consisting of three, are to be allowed to continue their work in the future without any further wrangling on the part of some of their "non-competent advisors."

The Port Commission will at once proceed with work under the general plans in mind prior to the election. It has already opened bids and will soon award a contract for all the creosoted piling required. The surveys are complete, as are also the Commission's appraisements of lands, and nothing but the condition of the bond market stands in the way of rapid progress.

LET "REFORM" ENTER

Experience has repeatedly shown that many of the rules framed by the Steamboat Inspection Service have been found full of inconsistencies, errors and inequalities, and this fact has on various occasions formed the chief argument of many who have clamored, and justly so, for the repeal of existing rules and the enactment of new ones.

This statement will apply to the chapter of section 6, rule III, General Rules and Regulations prescribed by the Board of Supervising Inspectors, in connection with motor boats, of which mention is made elsewhere in this issue, and will also apply to coming new chapters until we have reformed our methods of reconstructing and revising our Steamboat Inspection Rules by everlasting amendments.

So long as our methods continue to be hopelessly wrong and inadequate it is useless to expect that any rule, however sound and acceptable to the country in principle, will be sound and correct in detail and therefore assured of general and lasting acceptance

The defect in our method is the attempt to determine a vast number of facts, a knowledge which is essential to intelligent law making, by means of hearings, however prolonged, of boards or committees composed of men having many other duties to fulfill. Many of the individual members of these boards or committees are not in possession of the essential technical training and experience, and all of them are under the necessity of reaching conclusions within a short time limit upon questions affecting at times many vast and various industries of the Nation.

Other maritime powers have long since recognized the utter inadequacy of this method and have substituted for it the modern system of continuous research by a permanent staff of trained and competent experts, the fruits of whose work are available to any



law-making body and are utilized as the foundation for all legislation or rule-making of any department so empowered.

In a previous issue of this publication when treating on a similar subject, I took occasion to state: "The creation of a department of experts upon whose experience, word and skill the United States Government could absolutely rely is still sadly wanting. Fair and just recommendations could be made, protecting the travelling public, the maligned shipowner, those who follow the sea professionally and all other allied interests and industries in water-borne commerce.

Let "reform" enter and set in motion an effective Government agency for conducting the vast and constantly increasing amount of technical and practical work involved in gathering, analyzing and compiling the information needed for the guidance of all intelligent law-making.

THE "MANCHURIA'S" SKIPPER, HIS OFFICERS AND CREW

I can hear praises sung of Captain Dixon, officers and crew of the S. S. "Manchuria," in the chorus of which the Pacific Marine Review heartily joins. The rescued men of the schooner "San Santiago" and the rescued officers and crew of the wrecked Swedish steamer "Nippon" have all reasons to long remember the timely arrival of the Pacific Mail liner under its capable commander at the scenes of their distress.

This reflects great credit on those on board the S. S. "Manchuria" engaged in this noble work, but above all on its modest commander, who displayed excellent skill, sound judgment and rare seamanship, particularly so in the hazardous rescue of the "San Santiago's crew, the report of which is mentioned elsewhere in this publication.

"You know what the typhoon season is in the Orient; there are always lives to save," is the modest

exclamation of the Manchuria's skipper when requested to relate the notable incident, the successful accomplishment of which stands to his credit. Captain Dixon belongs to the type of sailors who received their early training on board the now almost vanished square riggers. Many of us look back with particular pride to this thorough training which truly inspires affection, intensifies professional enthusiasm and creates such modesty as Captain Dixon possesses.

The skipper speaks enthusiastically of his Chinese crew, the appreciation of which finds a ready echo in those who know their worth. Despised as these Chinese are by our petty politicians, who in ignorance and under the mantle of false pride and doubtful patriotism pretentiously proclaim their opposition, and without any sound reasoning, to the employment of such capable crews. Many of our skippers active in the Oriental service would not care to continue in their profession if a pernicious law system should forbid the employment of those Asiatics who possess every quality anent sailor, fireman and waiter, making the operation of American steamers under our existing antagonistic law system, in competition with favored rivals under foreign flags, possible.

Under the efficient leadership of such a captain and officers, the so despised Oriental receives every human treatment, in return for which these Chinese give indeed most satisfactory service, become part and parcel of the system of essential discipline on shipboard and are ever ready in time of need to jeopardize, if necessary, their lives in the rescue of others. The Chinese are professional sailors, born and raised on the water, and their boatmanship in all weather conditions is hard to beat.

With such a capable skipper, officers and crew, the Pacific Mail Liner "Manchuria" has justly won laurels, and the prompt and notable action of this vessel's commander shines forth as a splendid example of seamanship under our flag which is, unfortunately, so seldom seen in the off-shore trade.

THE ISHERWOOD SYSTEM OF SHIP CONSTRUCTION AND ITS PHENOMENAL SUCCESS

SINCE two hundred and sixty vessels, approaching one million and a quarter gross register tons, have been built or are now under construction, the Isherwood method has so obviously met with phemonenal success that this excellent system of ship construction is well worth reviewing.

In the Isherwood system of construction the transverse frames and beams are fitted at widely-spaced intervals, the general practice, so far, having established this at about 12 feet. These structures form complete transverse belts around the ship. They are directly riveted to the shell plating and deck of the vessel, and are made of not less strength than the number of transverse frames that are fitted in ordinary vessels for a corresponding length of ship. These strong transverse girder frames are slotted around their outer edges, in order to admit of continuous longitudinal stiffeners being fitted, not only at the decks, but on the sides, bottom and tank top.

The fitting of these longitudinal stiffeners directly on to the plating prevents damage to the decks through buckling, which has been sustained in vessels of the ordinary construction which have had no fore and aft support to the plating in between the transverse beams. In vessels with double bottoms transverse

floor plates are fitted intermediate to those at the sides and decks of the vessel. These intermediates enable sectional materials, such as bulb angles, being utilized as longitudinals both at the tank top and on the outside plating, thereby providing a double-bottom construction which is much more ready of access than one built on the ordinary system.

Some advantages of the system are:

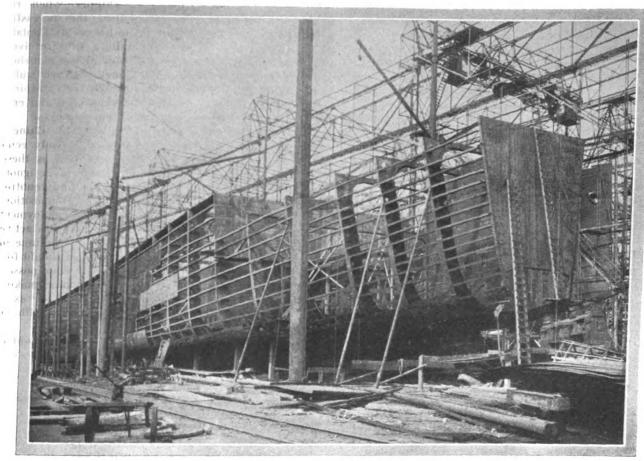
Greatly increased longitudinal strength and the prevention of deck damage through buckling, owing to the support given to the plating by the fitting of continuous longitudinals.

Reduced cost of maintenance due to all parts of the structure being readily accessible.

Increased capacity for bale goods and for bulky cargoes on account of the floor being carried flat to the side of the vessel and the absence of beam knees between the widely-spaced transverses.

Increased deadweight carrying capacity without additional cost to the owners of the vessel. This is important, as the additional deadweight is gained without increasing the draught of the ship. The saving in weight of material has been effected by dispensing with beam knees, a number of bilge brackets, tank knees, packing and many transverse connections





CONSTRUCTIONAL VIEW OF CARGO LINER SHOWING ISHERWOOD SYSTEM OF CONSTRUCTION

which are necessary in vessels of the ordinary construction.

If the additional deadweight capacity is not required, advantage of the saving in weight might be taken in producing a finer model, and so provide a vessel easier to drive and, therefore, more economical in the matter of fuel consumption, and, at the same time, provide for the same cargo capacity in proportion to the deadweight of the steamer.

Limber space can be recovered and utilized for water ballast when desired, and without the objectionable obstruction caused by the fitting of frame brackets as in the ordinary type of vessel when the tank top is carried out flat to the side of the ship.

Reduction of vibration owing to the continuous fore and aft support given to the plating of the structure.

There are few pillars required in the holds, it being only necessary, except in the case of a vessel with great beam, to fit pillars at the center line at each of the transverse beams. This gives a spacing of about 12 feet, and provides an admirable arrangement in steamers in which large unobstructed spaces are required for handling and stowing large and bulky goods.

The hatchway pillars, which in some cases have been fitted at the widely-spaced transverses abreast the hatchways, can be readily dispensed with if desired by the owner when the design is determined upon, and this can be done without the "extra" required in vessels of the ordinary construction.

Improved ventilation due to the longitudinals forming fore and aft air courses. This has been strikingly brought home in the case of two Isherwood vessels employed in the River Plate trade, where there has not been a particle of sweat damage in these vessels

when carrying grain either in bags or in bulk. This matter of ventilation will be found of great value for vessels engaged in the rice-carrying trade.

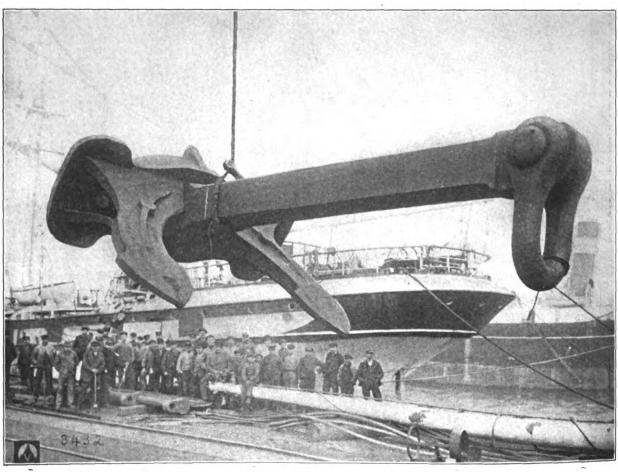
The system is particularly advantageous when applied to the construction of vessels designed for carrying oil or other liquid cargoes in bulk. The simplicity and ease of erection and construction permits of considerably more hydraulic riveting being done on the ground, and most of the inside riveting, caulking and general finishing off can be done to a much greater extent before the outside plating is fitted, or whilst it is being fitted.

The system has met with great success, and has been adopted by many prominent shipowners; and although the first steamer has only been at sea for four years there are now 248 vessels built or building. The dimensions of these vessels range from 170 feet to 530 feet for sea-going ships. Two vessels of the latter length have now been built, one of which, the Lamport & Holt liner "Vestris," has two decks exclusively for passenger accommodation. Several orecarrying steamers, up to 600 feet long, have now been constructed for trading on the Great Lakes of America. These vessels have been classed 100A1 at Lloyd's "For service on the Great Lakes."

In the construction of oil-tank vessels the system stands pre-eminent, and, up to the present, no fewer than eighty-six vessels of this type have been built, or are being built, aggregating about 456,744 gross register tons, and included in this number are twelve steamers, each to carry 15,000 tons, and several to carry 10,000 tons deadweight.

The method of construction has the approval of Lloyd's Register of British and Foreign Shipping, Bureau Veritas International Register, British Corporation for the Survey and Registry of Shipping, Norske Veritas, Germainischer Lloyd, and American Bureau.

Relative to the two fast colliers of 13,000 tons deadweight which have been constructed at Sparrow's Point for the United States Government, it is interesting to note that the first of these, the "Orion," was built by the Maryland Steel Company in record time. The vessel is 536 feet long and was launched in a little over five months after laying the keel. On the trials of the "Orion" a striking feature was particularly noticed. The deflection due to the load was 71 per cent less than on the collier "Neptune" (a vessel built on the transverse system), under similar conditions. The deflection taken from the above percentage was the maximum in both ships, and was taken at the same point. The load on both ships at the time the deflection was read was 12,500 tons of coal, 120 tons of feed water and 130 tons of stores. This is a striking illustration of the increased strength of Isherwood ships, and in addition to this advantage there was a further substantial advantage, inasmuch as the deadweight was carried in the Isherwood vessel on 26 foot 10½ inch draft, as compared with 27 foot 7% inch draft for the vessel on the ordinary system.



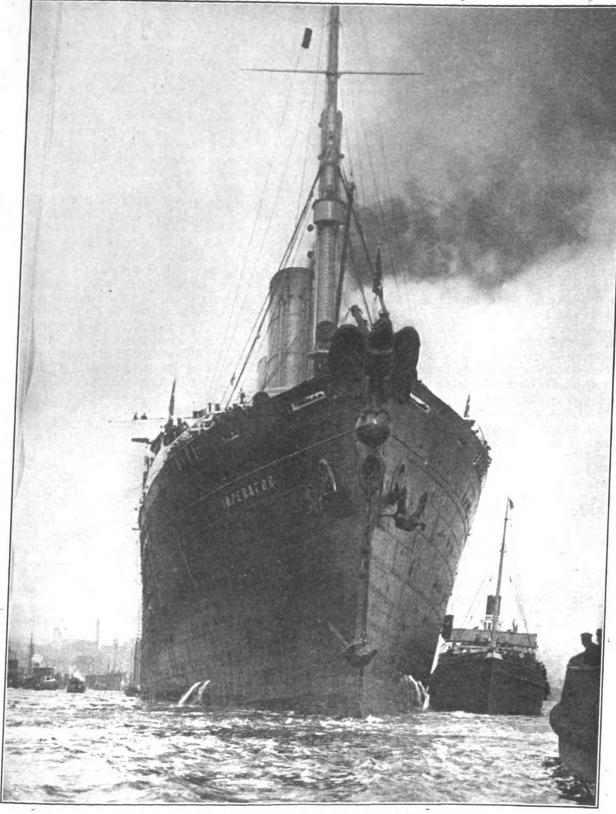
THE HEAVY BOW ANCHOR OF THE S. S. "IMPERATOR"

THE S.S. "IMPERATOR"

The new giantess of the Hamburg-American Line arrived on her maiden voyage at New York on June 19 and has since sailed eastbound with a full passenger list. This fine vessel is indeed an amazing wonder of naval architecture in many other respects than to its size, and more than conforms in every detail to the laws governing shipbuilding and equipment of ships both in the United States and in Europe. This bespeaks well of the German nation and its everincreasing merchant marine, of which this now largest and most perfected product of shipbuilding enterprise has become an active member. On this occasion we again give the "Imperator's" dimensions: Length over all, 919 feet; breadth, 98 feet; depth, 62 feet, with an approximate registered tonnage of 52,000 tons; sea speed, 221/2 knots. She is manned by a crew of 1,180 specially selected for their long service on other ships of the company.

The "Imperator" has been constructed with sixteen steel bulkheads, forming in all thirty-six water-tight compartments. These are still further subdivided by the steel decks, giving the ship a cellular construction throughout. The bulk heads have been carried to the level of the second deck, high above the water-line. Each compartment has been completely flooded with water to test its efficiency under extreme conditions. The bulkheads are fitted with Dorrscher doors and closing appliances operated hydraulically from the commander's bridge, while a second appliance operated from the upper deck is held in reserve.

The "Imperator" carries eighty-three large life boats of the most approved type, accommodating every one on board. Two of these are high-powered motor boats, capable of towing the others. The motor boats are equipped with wireless telegraph working over 200 miles. Many of these boats are carried on the



GIANTESS OF THE HAMBURG-AMERICAN LINE

upper deck between the funnels, and may be lowered by special cranes to either side of the boat. The apparatus employed for handling all these boats is of the newest type, making it possible to lower a boat from an upper deck in a few seconds. The safety equipment also includes the necessary life belts for everybody and illuminated life buoys. The efficiency of all apparatus is assured by frequent drills and rigid discipline.

The "Imperator" has a commander, an executive captain and three watch captains, one in special charge of navigation and another of the safety conditions, assisted by seven officers. The engineering department is directed by one chief engineer, three first engineers as watch engineers, and a staff of twentyfive engineers and electricians. The health of the passengers and crew is cared for by three physicians and two medical assistants. The highly complicated life of the great ship requires the services of a paymaster

and three assistants, a storekeeper, provision superintendent and five provision overseers, three baggage masters, a superintendent of materials, three telegraphers, two telephone operators, four barbers, a hair dresser, three printers, a cabinet maker, a tailor, four elevator operators and a gardener.

No hotel on either side of the Atlantic offers its guests so great a choice of dining rooms, ball rooms, winter gardens and palm rooms, grill rooms, smoking rooms, gymnasiums, roof gardens, public baths and luxurious lounges. The leading decorators of Europe have been entrusted with the decorations of the "Imperator's" cabins, and each is a masterpiece in its individual style. The great size of the "Imperator" has made it possible to give her some of the most spacious rooms ever enjoyed on shipboard. The main lounge, which may be converted into a ball room, is hung with Goblin tapestries and equipped with a practical stage for theatrical performances. An unusual amount of space has been set aside for an elaborate winter garden with a wealth of tropical vegetation. There is a running track, an elaborate Roman bath and swimming pool, and a variety of Russian, mineral and electric baths with skilled attendants, a florist, candy and book shop, a public stenographer, a photographic dark room, electric elevators, and every conceivable appointment to assure luxury and variety throughout the Atlantic crossing.

The wireless telegraph equipment of the "Imperator" is sufficiently powerful to work over a range of 1,500 sea miles. The ship has two reserve antennæ and two receiving instruments for long and short waves, designed for news service and rescue work. The station is directed by three expert operators, one of whom will always be at the key.

The "Imperator" is propelled by mammoth quadruple turbine engines developing 62,000 horsepower. She has four winged screws of turbadium bronze, measuring more than five metres in diameter, which turn at a normal speed of 185 revolutions per minute. The machinery for reversing the engines is especially efficient, enabling her commander to direct her movements more quickly than that of ships of far less tonnage. The backward moving power of all the reverse turbines is about 35,000 horsepower. The ship has four furnace roms which are divided into watertight compartments by transverse and longitudinal bulkheads.

The vessel carries five great anchors. The main anchor weighs 26,455 pounds, her two bow anchors 17,636 pounds, a fourth 11,463 pounds and her warp anchor 4,960 pounds.

It has been announced at the Mare Island Navy Yard that \$205,000 has been saved in the construction of the collier "Jupiter." This amount is to be turned back to the Government as soon as the auxiliary is accepted in July. Only \$1,200,000 was set aside for the construction of this vessel, the largest ever built in a navy yard on the Pacific Coast.

Foreign ships, arriving in San Francisco Bay after sundown, are not allowed to dock at present. It is hoped that the Department of Public Health in Washington, D. C., will soon allow foreign vessels to pass quarantine after sundown.

ANOTHER RECORD YEAR FOR LLOYD'S REGISTER

Lloyds made a record during the last two years as far as shipbuilding is concerned. During 1912, Lloyd's Register classed the record total of 1,403,000 tons, and the total amount of shipping classed during the existence of the society exceeds forty-two and a half million tons.

Everything from a ten-ton yacht to a vessel of the size of the "Aquitania" is now included in the extensive range of work carried on by Lloyd's, and Lloyd's surveyors show really remarkable efficiency.

Practically the whole of the immense tonnage (over 400,000 tons) of "tank" vessels now building on contract in Great Britain and abroad and vessels on the Isherwood system of longitudinal framing, are for this society's classification. There are also building under the society's survey a large number of vessels to be fitted with internal combustion engines.

The society's surveying staff now numbers 347 surveyors, 276 of whom are exclusive salaried officers of Lloyd's Register, 79 of them being stationed at leading shipping ports other than those of Great Britain.

There exists every indication of making this dignified and efficient bureau in the future an international bureau, which indeed would be a blessing to ship construction, classification and assignment of freeboard in the United States of America.

NEW CONTRACTS AWARDED TO THE SEATTLE CONSTRUCTION AND DRYDOCK COMPANY

The contract for the construction of the United States submarine tender "Bushnell" has been awarded to the Seattle Construction and Drydock Company at a cost of approximately \$1,000,000, with contract date for completion in twenty-one months. This vessel is intended as a repair and supply tender for the submarines on the Pacific Coast, which fleet will then be more independent of a home station, both in regards to necessary repairs as well as the supply of fuel, etc. This will greatly facilitate the cruising radius of the submarines. The "Bushnell" will be of the single-screw type driven by turbine engines, and her displacement is reported at approximately 2,500 tons.

In addition to the above, the Seattle Construction and Drydock Company has been awarded a contract for nine steel coal barges for the Navy Yard, Pugel Sound, Washington.

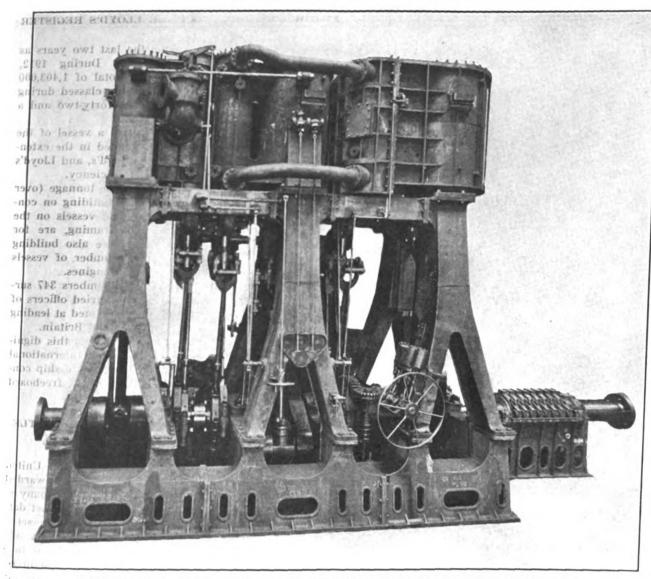
SUCTION DREDGE "DUWAMISH" LAUNCHED

The hydraulic suction dredge "Duwamish" was recently launched from the yards of the Drummond Lighterage Company, Seattle.

This vessel, capable of dredging to a depth of twenty-four feet, has been built for use in the improvement of the Duwamish waterway and will cost, when machinery installation is completed, in the neighborhood of \$142,000.

The "Duwamish" is 132 feet long, 40 feet beam, has a depth of 11 feet and is guaranteed to handle 400 cubic yards an hour. The dredge was built under the supervision of Mr. J. B. C. Lockwood, its designer, who is supervising engineer of the port of Portland. Mr. Frank Swanberg and Mr. J. L. Gibson of the Marine Pipe and Machine Works, Seattle, will install the machinery.





ENGINES OF S. S. "CONGRESS," NEW STEAMER FOR PACIFIC COAST STEAMSHIP CO.

Ithe S. S. "Congress" is fitted with two sets of triple expansion engines 28½" x 46½" x 78" x 54" stroke. The engines are expected to develop 7,400 horsepower at from 84 to 88 revolutions. Steam is supplied by ten boilers of the Scotch marine type working at 180 pounds pressure. The S. S. "Congress," description of which appeared in our last issue, will be a very valuable addition to the present fleet of the Pacific Coast Steamship Company. There is little doubt that upon her arrival on this Coast in from sixty to seventyfive days the "Congress" will be even more popular than the "President" and "Governor," which ships are much appreciated by the travelling public on the Seattle, San Francisco and Los Angeles route of the Pacific Coast Steamship Company. " 1 11 N 1/ 1 "".

NEW C. P. R. STEAMER NEARING COMPLETION

The steamer "Princess Maquinna," owned by the C. P. R., which is to succeed the old steamer "Tees" on the run to ports on the West Coast of Vancouver Island, will soon be ready for her trials. The "Maquinna" is a modern and thoroughly up-to-date vessel, built by the B. C. Marine Railway Co. of Esquimalt, B. C. Her addition to the service will open up to the tourist a most interesting voyage, or series of voyages, touching many out-of-the-way places that are not seen by the ordinary traveller. The whaling stations themselves are interesting points for those unacquainted with this great industry. The "Princess Maquinna" will probably have her trial trip early in July.

The Victoria, B. C., Board of Trade is seeking to effect a better freight service with the growing markets of the North. At present boats running direct are few and far between and the Board hopes to be able to find a solution for the problem.

A large gentleman was alone occupying a seat in a railway car. A Jew came and looked at the seat, but its occupant did not move. After some minutes the occupant of the seat said to the Jew, "You stand there and look at me as if you were going to eat me." "Oh, no," said the other, "my religion does not permit me to eat you. I am a Jew."-Western Woman's Outlook.

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RICHMOND
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EOCENE
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ROMA
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SANTA CLARA SANTA CLARA U. S. GOV, DREDGE

PRINCESS ALICE

" MAY

" VICTORIA

" BEATRICE

" ADELAIDE

" SOPHIA

" PATRICIA

SOPHIA

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PACIFIC
UNION
SELMA
COWICHAN
LANSING
U. S. GOV. DREDGE
CHESLAKEE

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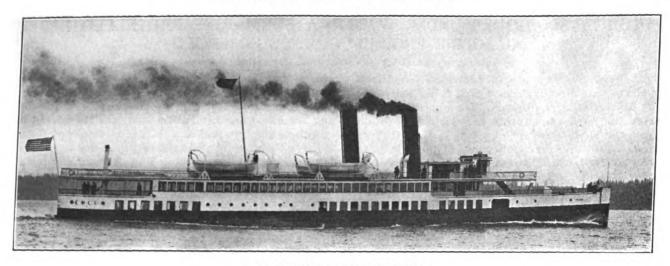
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S. S. "TACOMA" ON TRIAL TRIP

The S. S. "Tacoma," built by the Seattle Construction and Drydock Company for the Inland Navigation Company's Seattle-Tacoma service, made a speed of 20.78 knots on her trial trip. Joshua Green, president of the Inland Navigation Company, writes the following to the Pacific Marine Review:

"The 'Tacoma' is the fastest single propeller in the world, as far as we are able to learn, and promises to operate on a very economical fuel consumption. The S. S. 'Tacoma' is equipped with Ballin Water-tube Boilers. This vessel commenced services on the Seattle-Tacoma route June 21. We are thoroughly satisfied with her performance and only hope that the business on the route will be equal to the expense of operating boats of her class."

LARGE CONTRACT AWARDED UNION IRON WORKS COMPANY

The Union Iron Works is receiving congratulations from all sources on the large contract recently received from the Associated Oil Company for the construction of a large oil-tanker which is to cost in the neighborhood of \$1,000,000.

This is to be the largest oil-tanker flying the American flag, and we rejoice that this contract has been placed with a Pacific Coast builder.

The general dimensions of this vessel are: Length, 410 feet; beam, 55 feet 3 inches, and approximate depth 27 feet. The vessel will have one set of tripleexpansion reciprocating engines and four Scotch maand the necessary auxiliary and pumping machinery. rine boilers capable of developing 3,500 horsepower, The contract speed is 10 knots. She will be built of steel on the Isherwood system, longitudinal frame, and will carry approximately 62,000 barrels of oil. Contract calls for delivery in thirteen months, and the Union Iron Works Company has all reason to expect to deliver same in that time.

This vessel will have eighteen tanks for oil. Double bottoms will be built under the forward hold and the engines. All wooden decks will be of teakwood and the officers' cabins will be finished in mahogany. Ample quarters will house the crew of forty-one carried while in service.

The construction is under Lloyd's special survey and the vessel will be classed as 100A1. The latest safety devices, such as wireless and submarine signalling apparatus are planned. The steamer was designed by F. J. Trist, constructor for the Associated Oil Company. All the material for hull, boilers and machinery will be made on the Pacific Coast.

The Union Iron Works Company have several dredges under construction at the present time. They are also building three submarines, which are from 75 per cent to 90 per cent completed.

SHIPBUILDING IN JAPAN

The marked development in the art of shipbuilding, as well as in the provision of naval arsenals and other dockyards, is stated by the Kobe Chamber of Commerce to be the result of the constant encouragement given by the Japanese Government for the construction of warships and other vessels at home. The Imperial Navy has therefore decided to construct at home, besides the "Fuso" and three other sister ships of 20,000 to 30,000 tons already built at Kure and Yokosuka, three battleships of the same size, namely the "Hiei," "Haruna" and "Kirishima," warships now building abroad being only the "Kongo" and a few destroyers and submarine boats.

So far as the construction of merchant ships is concerned, however, the condition of the dockvards in Japan does not enable her to adhere entirely to the policy of constructing ships at home, the vessels building abroad for the Nippon Yusen Kaisha alone numbering four, with a total of 23,700 gross tons, namely the "Tottori Maru" of 6,500 tons, the "Tokushima Maru" of 6,500 tons, the "Penang Maru" of 5,500 tons and the "Rangoon Maru" of 5,200 tons. But the tendency is nevertheless towards a steady development in the home construction of vessels on account of the Government subsidies as well as other encouragement constantly afforded by the authorities concerned. The vessels now building in the domestic dockyards number eight in all, with a gross tonnage of 77,100 tons, as detailed in the following table:

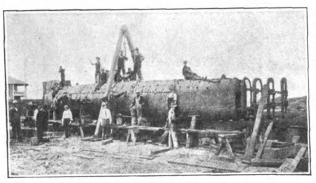
Dockyards. Names of Vessels. Mitsubishi"Fushimi"	Tonnage. Gross 11,900
Mitsubishi"Suwa"	11,900
Mitsubishi"Katori"	10,500
Mitsubishi"Anyo"	9,400
Kawasaki"Yasaka"	11,900
Kawasaki	10,500
Kawasaki"Yamashiro	3,500
Kawasaki"Sakaki"	3,500

THIRTY-SIX HOURS UNDER WATER—A SUBMARINE PROPELLED BY GASOLINE ENGINES WHILE SUBMERGED

By CHARLTON LAWRENCE EDHOLM in "Scientific American"

Last week the newspapers contained telegraphic dispatches sent directly from a craft at the bottom of Long Beach Harbor, California. The vessel was a submarine that was endeavoring to establish a world's record for submergence by staying down thirty-six hours as against the record then held by the "Octopus," which in 1907 remained under water twenty-four hours. The new submarine sank at 11 A. M. on Monday and promptly at 5 P. M. Tuesday rose to the surface with its new endurance record. It contained a crew of six men, who were not in the least affected by their long imprisonment. Throughout the test they were able to communicate with the outside world by means of a cable.

The submarine is a seventy-five-foot craft with 7.5-foot beam and weighs forty-three tons. It differs materially from the more familiar types, the most striking innovation being the position of the propellers near the bow. It is claimed that by thus pulling instead of pushing the vessel through the water the tendency to dive too abruptly is eliminated.



CONSTRUCTING THE HULL OF THE "CAGE" SUBMARINE

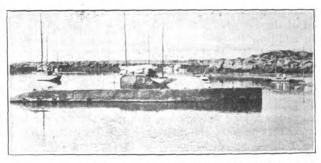
The inventor is John M. Cage, who has been studying the building of submarines for many years and believes that his model will prove superior in many respects to those now in use. He claims a speed of from seventeen to eighteen knots for his vessel, running submerged, with a maximum speed on the surface of about sixteen knots. There are various automatic controls for ventilating, regulating the depth, maintaining stability and steering, but the details of these devices are withheld pending the issue of patents. The nature of some of them may be observed in the photographs, as for instance the rudder, which resembles that of an aeroplane, the projection along the top of the craft resembling the dorsal fin of a fish, etc.

A very important feature is the elimination of storage batteries, as the vessel is operated by gas engines, used during submergence as well as while on the surface. Two gasoline engines are used, each developing 110 horsepower. By a device of unique construction, the exhaust from the engines is expelled from the submarine, while running under water, and an advantage of this system is that greater speed is obtainable while submerged than when running on the surface. Of course the use of gas engines under water necessitates the operation of a device to discharge the exhaust so completely that the air will not be vitiated, and the inventor's tests seem to indicate that he has solved that problem.

An air compressor and flasks for storing up 36,000

cubic feet of air with a pressure of 3,000 pounds form an essential part of the new submarine's equipment.

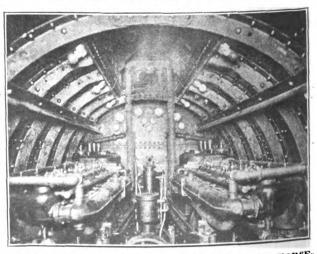
On March 26 a test run was made at Long Beach with the following result: The boat was submerged to a depth of eighteen feet in a thirty-foot depth of water and was found to respond perfectly to her horizontal and vertical rudders, sinking bow first or stern first at will of the inventor, or rising and sinking on even keel. Three men made the initial trip, Mr. Cage, Chief



AFLOAT AT LONG BEACH HARBOR, CALIFORNIA

Engineer Allen Hoar and Assistant Engineer Clifford Hauenstein. Later in the day, some newspaper men were taken on a trial trip, and they also reported the success of the engine operations and the purity of the air while they were submerged and the absence of gasoline fumes. Of course no tests for speed were made while in the harbor, but it is believed that records in that line will be made, owing to the novel features in the general outline, position of the propellers and devices for securing maximum power from the engines.

Regarding the feature of elimination of gas fumes, Mr. Cage says: "By our mechanical means we have run the engines, exhausting overboard against a back pressure of 12½ pounds, all the while maintaining a vacuum on the engine exhaust of 23½ inches. We have also run the engines under water with the valve on the outboard exhaust closed down until the gage showed a back pressure of 150 pounds, corresponding to a depth of water of over 300 feet, and at that pressure run the engine for thirty minutes, always showing a vacuum of six inches on the engines. This test showed no appreciable load on the engines."



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SHIPBUILDERS: AND: ENGINEERS

The novel craft was built at a cost of about \$70,000, and was constructed partly by the Craig Ship Building Company at Long Beach and completed in the yard of the Los Angeles Submarine Boat Company.

In addition to its value as a war craft Mr. Cage and his associates believe that there are great commercial possibilities in a vessel designed for the recovery of sunken treasure, and of course records are extant of countless millions of dollars in gold that have been lost in wrecked ships, and in many cases the position of the wrecks is known with sufficient accuracy for a submarine to locate them. Regarding



THE COMPLETED CRAFT. NOTE THE FORWARD PROPELLERS

this, the inventor says: "We propose to build a boat capable of being submerged to a depth of 1,000 feet with perfect safety, and with a lifting capacity of seventy-five tons. With grappling hooks, or clam-shell dredger, and with large and powerful are lights installed in the bottom of the boat, it would be a feasible undertaking for men within the submarine to work effectively in recovering sunken treasure."

FLEET INCREASE OF TOYO KISEN KAISHA IN SOUTH AMERICAN TRADE

Heretofore only the "Kiyo Maru" and "Buyo Maru" were employed by the Toyo Kisen Kaisha in their South American service, which is now to be augmented by the "Anyo Maru" and another vessel.

On January 26, 1913, the "Anyo Maru" was launched at the Mitsu Bishi yard at Nagasaki and sailed from Yokohama for Valparaiso via Honolulu and way ports on June 20. Ports of call include Hongkong, Moji, Kobe, Yokohama, Honolulu, Manzanillo, Salina Cruz, Callao, Arica, Iquique, Valparaiso and Coronel. These three vessels are at present operated on a sixty-day schedule. A sister ship of the "Anyo Maru," also intended for this trade, will be completed during the latter part of this year or early in 1914. The "Anyo Maru" is of 9,400 tons gross and of the following dimensions:

Length, 460 feet.

Breadth, 60 feet.

Moulded depth, 40 feet 6 inches.

Type, shelter deck.

The vessel has five holds--three forward and two aft.

Deadweight capacity, including bunkers, stores, etc., is 12,650 tons.

Draught, 30 feet 5½ inches mean.

The cargo capacity consists of 8,564 cubic tons, exclusive of steerage quarters.

The "Anyo Maru" is fitted with modern derricks, winches and cargo gear; has accommodation for thirty first-class, 50 second and 638 steerage passengers.

The first and second-class accommodations provide separate dining saloons, smoking rooms and spacious promenade decks. The vessel is equipped with wireless.

Her propelling machinery comprises two sets of Parsons Geared Turbines (with reversing turbines), which are capable of developing 100 revolutions per minute at a working steam pressure of 180 pounds per square inch, affording a speed of 15 knots.

Four single-ended boilers, dimensions 14 feet 6 inches by 11 feet 6 inches, with three furnaces each at a working pressure of 200 pounds to the square inch, with Howden's forced draft, provide the motive power.

SATISFACTORY INSPECTION MADE

Mr. French, Surveyor for Lloyd's Register at the Port of New York, the leading man of this great institution in the United States, and Mr. W. H. Stewart, Engineer Surveyor for the Port of San Francisco, made a trip of inspection to the Columbia Steel Company at Pittsburg, California, this week. They scrutinized the entire plant and processes of manufacture of steel castings for various classes of work made at the plant, and particularly for marine work. Tests were made of the physical and chemical qualities of the steel, and their inspection was so satisfactory that they have accredited the Columbia Steel Company as manufacturers of steel under Lloyd's Rules and Regulations. This is quite a feather in the cap of the local concern, and means a great deal to the shipping interests here, as it enables them to obtain both new and repair work on the Pacic Coast and avoids the delays necessary when obtaining castings from Eastern plants.

The Southern Pacific Company are at present constructing at their Oakland shipyard a steel hull passenger ferry steamer, for the San Francisco-Oakland Ferry route. A car transfer ferry steamer for the Port Costa-Benecia route is also being built.

Hough's System of Ship Construction

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STEAMERS OF THE ATLANTIC AND PACIFIC S. S. CO. TO MAKE LOS ANGELES A PORT OF CALL

THE Atlantic & Pacific Steamship Company, now being operated by Messrs. W. R. Grace & Co., will have before the end of 1913 four new American steamers in the New York trade via Magellan: S. S. "Santa Cruz," 7,000 tons; S. S. "Santa Clara," 10,000 tons; S. S. "Santa Catalina," 10,000 tons; S. S. "Santa Cecelia," 10,000 tons.

The S. S. "Santa Cruz" is the only one of these four steamers which is equipped with passenger accommodations, this steamer having first-class cabins for fifty persons. Some of these staterooms are luxuriously fitted up, being equipped with hot and cold shower and tub baths, fresh and salt water, brass beds, electric fans, etc.

Arrangements are being made to call at San Pedro (Los Angeles) with all of these steamers, and the new service is being looked upon with favor by the Los Angeles shipping public and receiving substantial support.

The S. S. "Santa Cruz" has made one voyage out from New York and is now upon the return voyage to that port, being due there about July 1, with a full cargo and a heavy passenger list from the Pacific Coast.

The S. S. "Santa Clara" will commence loading at New York for the Pacific Coast about July 25 next, and is expected to reach San Pedro in forty-two days, San Francisco forty-six days, and will proceed from this port to Puget Sound to complete discharge and to commence reloading for New York.

The S. S. "Santa Clara" was launched at Philadelphia June 5, and is expected to be delivered on July 20. The dimensions of the S. S. "Santa Clara" are:

Length overall, 430 feet.

Length between perpendiculars, 404 feet 6 inches. Beam, 54 feet.

Depth to upper deck, 28 feet 9½ inches. Coefficient, .75.

With engines $25\frac{1}{2} - 37 - 52\frac{1}{2} - 76$

54

Three boilers, 16 feet outside diameter, 12 feet 3 inches long.

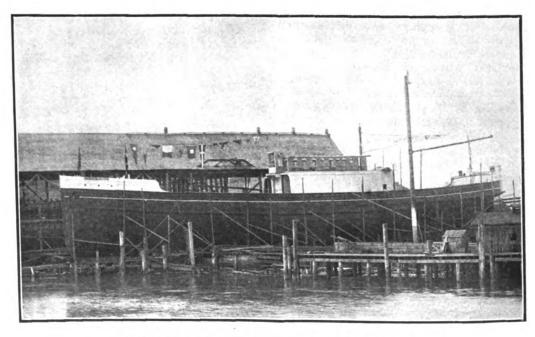
215 pounds pressure.

75 revolutions.

The S. S. "Santa Clara" is equipped with refrigeration for 500 tons of perishable cargo, and with the other steamers which are under construction for this company will make a very valuable addition to the American coastwise fleet serving San Francisco and other Pacific Coast ports of the United States.

The S. S. "Santa Catalina" is expected to be delivered by the builders about August 20, and the S. S. "Santa Cecelia" about October 1. These vessels will load at New York for Pacific Coast ports as soon as completed.

These steamers will continue to be operated between the Pacific Coast and the Atlantic Seaboard via Magellan until the opening of the Panama Canal, when they will be diverted to that waterway.



S. S. "ROSALIE MAHONY," JUST PRIOR TO LAUNCHING

The new Olson & Mahoney boat, "Rosalie Mahony," building by the Matthews Shipbuilding Yards at Hoquiam, Wash., was successfully launched on June 13. After the spars and rigging are placed aboard the vessel she will be towed to San Francisco, where her machinery will be installed.

The "Rosalie Mahony" will cost \$125,000 when completed and will be operated in the coastwise lumber

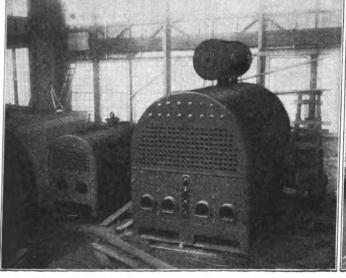
trade. The vessel is 210 feet in length and has a carrying capacity of 1,000,000 feet of lumber. A sister ship of this vessel is under construction at Eureka, California, and is to be christened the "Mary Olson."

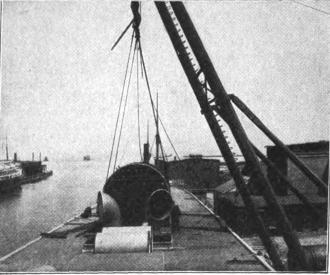
The Olson & Mahony Company operate a fleet of steam schooners along the Pacific Coast from Panama as far North as Prince Rupert, British Columbia.



THE MANITOWOC BOILER WORKS COMPANY, MARINE SPECIALISTS

One of the specialities of the above company is the Scotch Marine Multitubular Boiler, which is economically designed and capable of withstanding very hard usage. This has been the standard type of boiler for marine use for many years on both fresh and salt construct Horizontal Return Tubular Boilers for power plant use and also Scotch Dry Back Boilers. All the marine boilers constructed by the company are designed and constructed in accordance with the United State Government requirements. All materials and workmanship entering into their construction are carefully inspected and the required hydrostatic pressure test is then applied to the shell.





SECTION OF BOILER UNDER CONSTRUCTION

water; the fact of its being internally fired makes the Scotch boiler very economical on fuel, as there is little waste of the heated gases of combustion, the large steam and water spaces and the great volume of water it can contain renders it perfectly safe in operation, giving a steady steam supply.

When conditions require maximum power for a small given space, minimum weight and quick steaming capacity, the company recommend the use of the fire-box marine boiler in preference to the foregoing heavy Scotch marine type; such conditions are often met with in the tugboat service. The fire-box type of boiler is especially suitable for this service, as it is a quick, free steamer and adapted for the lower pressure.

The Manitowoc Company is prepared to design and

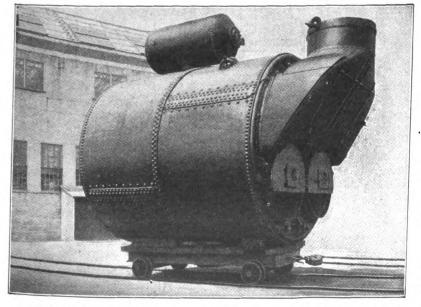


The company claims their Manitowoc Boilers are superior because: (1) All rivet and stay-bolt holes are drilled, thus avoiding any strain on the plate caused by punching. (2) All flanged plates are thoroughly annealed in the annealing furnace after the flanges have been turned. (3) Rivets wherever possible are driven with a hydraulic rivetter, exerting a pressure of seventy-five tons on each rivet. (4) Materials and workmanship are the very best obtainable. (5) Designs of the latest type are drawn up to meet the special requirements of prospective customers.

Marine repair work receives the same undivided attention as new boiler construction, and thorough satisfaction is guaranteed.

The headquarters and works of the company are

at Manitowoc, Wisconsin, and they will be glad to answer any inquiries, quote prices, and submit designs for any special requirements.



SCOTCH MARINE BOILER BUILT BY MANITOWOC BOILER WORKS

SUBMARINE "IQUIQUE" LAUNCHED

The Submarine "Iquique" was launched on June 3, 1913. This submarine was built for the Chilean Navy at the plant of the Seattle Construction and Dry Dock Company and is a sister ship of the "Antafogasta," which is still on the ways. The submarines are of the Holland type. The "Iquique" is the first Chilean war craft ever constructed in the United States.

The second submarine for the Chileans will be launched about August 1. A submarine for the United States Government is rapidly nearing completion and will be launched some time in July.

CHRONOLOGICAL PROGRESSION IN DETAILS OF SHIP CONSTRUCTION

By JOS. R. OLDHAM, N. A. M. E.

Early Web Frames

The Pacific Steam Navigation steamers "Britannia," "Puno" and "Corcovado," which were surveyed by the writer for classification in the Bureau Veritas, had the first web frames which came under my notice. This was in the year 1873. These were not then prescribed either by the Veritas, Lloyds Register, or other rules, and were not formally demanded by any of the ship classification societies until some time subsequent to the year 1880. In those days, channel bars were unheard of, and the web frames were formed of broad plates attached to the angle bar frame, and with vertical marginal bars on their inner edge, extending from the floors to the strength deck, and riveted thereto. These are commonly constructed in the same manner today, as shown in Fig. 2.

With the modern longitundinal frame system, these transverse members are constructed in practically the same manner, except that the transverse web plates are notched, or slotted, and the angle frame bars cut, as shown in Fig. 1, to allow of the longitudinal members passing through them.

Iron Decks .

The first iron decks which came under my survey had been fitted in the S. S. "Grecian," constructed by Harland & Wolff of Belfast, in 1863, for J. Bibby & Sons. Though, of course, they were then to be seen afloat, like every other strong and economical element in ship construction, in the "Great Eastern." These early iron decks, however, were made of corrugated iron, and no doubt the deck-hands of today devoutly wish that that good practice could have continued ad infinitum.

Outside Butt-Straps

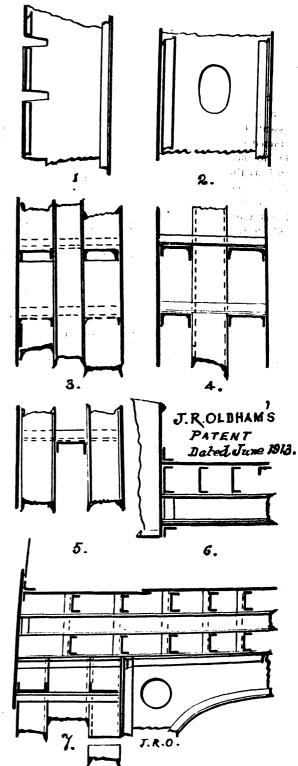
The first vessel to have outside, or double, iron buttstraps fitted, as originally designed and constructed, was the S. S. "America," designed by Professor Biles in 1882. These desirable adjuncts of iron ship construction had frequently been fitted before this date, on the Tyne and Wear by my recommendation, but such had been fitted simply to cover corroded or open butts. In the "America," however, they were designedly attached, of proper breadth and thickness, to efficiently bring the rivets into double sheer and thus permit of increased pitch of rivets and augmented tenacity.

Lapped Joints

Lap butts, or is I prefer to denominate them, lapped joints, are of comparatively modern date, though I saw them forty years ago in the old "Tiber," which was constructed by John Reid & Co. in the year 1851. As these require fewer rivets than butt joints of equal theoretical strength, they will probably survive, but for certain localities where the greatest stresses are likely to be experienced, double butt straps should always be resorted to as with such connection a tenacity exceeding 90 per centum of the solid plate may be secured. This is not practical with lapped joints.

Double Skins

Recently it has been generally conceded that for ships larger than the "Great Eastern," a double skin extending as high as at least one fathom above the maximum load water line, is very desirable, if not an absolute necessity, for passenger service. Partial double skins forming lower side water ballast tanks



have been generally fitted in large ore-carriers since the year 1902. The construction of a complete inner skin in all large passenger steamers has been repeatedly and strenuously advocated by the writer, and emphasized with elaborate illustrations in the Pacific Marine Review, Cassiers Magazine and other journals for the last fifteen years. But these constructions, as hitherto constructed, are very expensive, mainly for want of homogeneous stiffening and support, which, incidentally, would greatly lessen the amount of riveling.



It seems to be accepted that web frames are an essential of economical framing for longitudinally framed ships, though as a structural element they are by no means indispensable. The early iron vessels, such as the "Great Britain," had no web frames, and they never exhibited transverse weakness, but of course their frames were heavy. As an example, the Royal Mail S. S. "Tyne," built sixty years ago, though only 36 feet broad and 30 feet deep, had heavier fram-

ing than the White Star steamers "Adriatic" and "Celtic," built in 1872, which were more than twice as large. If the longitudinals be sufficiently strong and the transverse bulkheads closely spaced, web frames are unnecessary, though useful as a constructive convenience. Brunel foresaw this, and gave his greatest ship no transverse frames, formed either of plates or angle bars. His reasons for this may be inferred from his writings in which, according to the late Sir William White, he said that "no materials should be employed in any part except at the places, and in the direction, and in the proportion, in which it is required, and can be usefully employed for the strength of the ship; and none merely for the purpose of facilitating the framing and first construction." This broad generalization is often over-ruled by the desire to secure greater economy or rapidity in building, or by considerations of a practical nature involving accommodation, cargo-carrying power, or facilities for working cargo.

PRACTICAL DUTIES OF SHIPMASTERS

By CAPT. HARRY WILKES, R. N.R.

Loading a Steamer With a Homogeneous Cargo

Immediately there is sufficient cargo on board to ballast the vessel, and it is not certain that she will have sufficient stability when loaded without water ballast on board; pump out all ballast while the vessel is stiff and see that the tanks are thoroughly drained out. Do not run any water ballast into the vessel until it is certain that she will not have sufficient stability without. She can easily be tested, before completing the loading, in the following manner:

Land a few slings of cargo of a known weight on deck, as far as possible from the amidship line (four or five tons of cargo will be sufficient), and note the list that she takes. Should she list easily with a small weight and there is a considerable amount of cargo to go on board, get her upright again by shifting the cargo that is on deck into the hold, and continue loading until she shows her tenderness. When she shows her tenderness more palpably and, though the cargo and bunkers are evenly distributed, she takes a list, find from the displacement scale how much more cargo she should take to put her to her marks, and run in water ballast in a suitable tank to half that amount. When loaded the vessel will have sufficient stability, and if it is arranged that the coal stowed in the upper bunkers is burned first, as she gets to sea she will rapidly become stiffer.

Water ballast can nearly always be run into a tender vessel, but it can very rarely be pumped quite out, the reason for which is not hard to find. Should the vessel be nearly loaded before pumping the water ballast out, and it is then decided that she will have sufficient stability without any ballast, in such case, unless she is very stiff indeed, when the water becomes slack in the tank she will take a list, which will increase as the tank approaches emptiness, for she will not have so much stability, as when the tank was full; besides which she will have water on one side only and it will be impossible to drain all the water out of the tank, as the suction pipes are invariably situated at some distance from the side of the tank.

Should the vessel take a few degrees of list at any

time, by running water into her tanks she will at once possess greater stability, even though the list may increase at first. As the tank fills and the water rises on the higher side, the vessel will assume its upright position, unless there is more cargo on the one side than the other.

With a tender vessel, always fill the smallest tank first, as it is easily pumped out after a larger one is run up; when at sea it is advisable to bring the vessel's head to wind and sea.

Should a vessel at any time be found to list easily when a small weight has been put on one side of her, it will at once be apparent that she is tender, but should she have a high freeboard she will not turn over by reason of a greater breadth being exposed upon the surface of the water. As long as that breadth is on the increase and no water can find ingress she will become stiffer from any internally applied force, but should the water rise over the gunwale the breadth of the vessel at the surface of the water will diminish so rapidly with any increase of list that the vessel will lose the support upon one side and will be in danger of turning over.

It will be seen from Fig. 4 that as a vessel heels a certain amount, her breadth upon the surface of the water increases upon both sides of her; the wedge-shaped portion upon the side that was immersed when upright becomes exposed, while at the same time a wedge-shaped portion of similar dimensions becomes submerged upon the low side.

Before Taking in Cargo

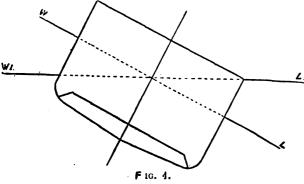
Before taking in cargo the chief officer should take up all the limber boards fore and aft, and after satisfying himself that they are clean, that the drains between each floor plate are all clear—i. e., not blocked with cement or dirt—and that the strums round each suction pipe are all clear, he, accompanied by the second engineer and the ship's carpenter, shall inspect the bilges. Water should be pumped into the bilges through the suction pipes and pumped out under the inspection of all three. The 'tween-deck drains should have a bucket of water poured down them in order to see that they are all clear and that



there is a free run of water to the bilges. An entry should be made in the log-book that the bilges and rose-boxes were inspected and passed by the engineer upon a certain date.

Dunnage.—The dunnage should be laid under the chief officer's inspection. In a steamer with a cellular double bottom and a three-inch ceiling laid upon one-inch cross-battens, two inches of dunnage laid fore and aft, or one-inch dunnage wood, the lower tier laid fore and aft, and the upper tier laid athwart, will in most cases be sufficient on the flat of the floors; with three inches in the turn of the bilge, the lower tier of which, if of one-inch, to be laid athwart; if of three-inch then all is to be laid athwart.

In the 'tween decks one-inch dunnage is sufficient for most cargoes, to be laid athwart; in the wings the dunnage should be doubled and kept a few inches from the side so as to allow a free run of the water to the drains. Should the cargo be of a perishable nature it is advisable to cover the dunnage with mats, and the mats carried right up the sides against the spar ceiling. If grain in bags is to be stowed, then the dunnage should either be covered with sails or gunny, to keep the loose grain from contact with the ceiling.



Care should be exercised to see that all the ventilators are free and not plugged with anything. This principally applies to insulated ships, whose ventilators are always plugged when carrying frozen produce.

Ship-log entries.—Sounding of bilges and tanks. Each day an entry should be made in the log-book to the effect that bilges and tanks have been sounded both a. m. and p. m.

Ventilation. Ventilation of cargo strictly attended to and hatches removed for ventilating purposes when weather permits.

Regulation lights. Regulation lights exhibited from sunset to sunrise.

Lookout. The names of the men employed on the lookout from sunset to sunrise, and should the weather be thick or hazy then the names of the man on the lookout at those times.

Inspection of bilges. Whenever an inspection of bilges and rose-boxes takes place before taking in cargo, an entry should be made in the log-book, stating who made the inspection, and specifying the time and date.

Tanks. When a tank is filled and emptied, the time and date of doing so should be entered up in the log-books.

Stranding. Should the vessel ground or strand, the time and date of the occurrence should be carefully entered in the log-book together with the least

water round her, the position of the ship, the means taken for getting her off, and the time of her floating. All entries to be made as briefly as possible and to the point.

Collision. The time and date of the occurrence, and the entry to be made as follows: "The '_____,' collided with us at such and such a time. Wind, _____, Sea, _____, Position: Lat. _____, Long. _____," and by cross-bearings if possible.

Loading. The cargo taken in each day, and the hatches worked, the times of working and the draft of water at the end of each day should be entered in the log-book. Should any cargo be refused through being in bad condition then the same should be entered up in the log-book; as also any other circumstances of interest that occurred during the operation of loading and discharging.

(To be continued.)

DEVICE TO AWAKEN LIGHT KEEPERS

A recording thermometer was installed at Cape Flattery Light Station, Washington, by Mr. E. L. Sherman, mechanician, Seventeenth district, in April, 1913, of the following description: The recording instrument used is a Bristol's class III recording thermometer with a temperature range from 0 deg. to 430 deg. Fahrenheit, fitted with high and low temperature alarm, placed in the service room below the lantern, so arranged that the contacts to the bells may be set at any predetermined points, and as the high and low contacts are set independent of each other any range of temperature may be allowed between the two. As set in this instance a range of 170 deg. between the two points where the bells will not ring is allowed. An alarm system of three bells is installed, one each in base of tower, fog-signal building, and keeper's dwelling. Six dry cells compose the battery for the circuit. The causes of alarm ringing are lack of proper ventilation, too much ventilation, light dying down gradually, or light going out suddenly, with other minor causes, such as mechanical or electrical troubles. While operating satisfactorily, the general effect of the installation on the light keepers was to cause a close watch to be kept on the light and not to trust the alarm too much. The actual thermometer (Bristol's No. 312) was suspended in a vertical position 14 inches above the top of the vaporizer tube and surrounded its full length by a brass shield 3 inches in diameter. The charts used are Bristol's No. 693 uniformly graduated in 10 deg. spaces. They are changed every 24 hours at midnight. The total cost of the installation was approximately \$100.

It is reported that the next vessel for Olson & Mahoney of San Francisco will be a twin-screw steel ship equipped with Diesel fuel oil burning engines built by the New Lodon Ship & Engine Co. of Groton, Conn.

Upon being introduced to Pat O'Reilly, a man asked him if he was related to Tim O'Reilly.

"Distantly," replied Pat. "Tim was my mother's first child and I was her twelfth."



THE COMMENDABLE RECORD OF THE S. S. "MANCHURIA"

The Pacific Mail Liner "Manchuria," in command of Captain Dixon, has the distinction of having established a record in rescue work on a voyage from Nagasaki via Manila to Hongkong. This fine vessel experienced a heavy typhoon on May 9, the center of which passed approximately fifty miles from the ship's position. About 10:30 A. M., during the height of the storm, which was blowing with hurricane force accompanied by the usual blinding rain and a heavy sea, a small schooner was sighted dismantled and flying signals of distress. Nothing could be done to rescue the men at that time. At 1:30 P. M. wind and rain began to moderate and with the rising barometer indicating that the center of the storm had passed, the "Manchuria" was turned around in search of the disabled vessel. At 1:45 P. M. the helpless craft was again sighted, but owing to the high sea running the "Manchuria's" commander could not risk a boat's crew to transfer the shipwrecked men to his own vessel. The seamanship displayed by the "Manchuria's" master in handling his big vessel so skillfully under most adverse weather conditions as to approach the disabled schooner close enough to rescue fourteen men with the aid of life buoys and ropes speaks highly of Captain Dixon's ability as a sailor and shipmaster. The "Manchuria" then proceeded on her way to Manila. On May 12 about 3 P. M., at the hour the "Manchuria" was scheduled to sail from Manila to Hongkong, a telegram was received by the Bureau of Navigation from Santa Cruz, located approximately 100 miles north of Manila, that a boat had arrived from the Swedish steamer pon" which had stranded on Scarborough shoal during the typhoon on May 8 and 9. The telegram stated that the steamer was in a sad plight and immediate assistance was needed for the rescue of the crew. It was decided that the "Manchuria" would deviate from her course to assist those in peril. The Scarborough shoal is a dangerous reef a distance of 180 miles W.N.W. from Manila. The S. S. "Manchuria" arrived in the vicinity of the wreck on May 13 at 7 A. M., when the operation of transferring the crew and their belongings in lifeboats was begun at once and successfully accomplished without a hitch of any kind. In all twenty-seven men were rescued and safely landed in Hongkong on May 14.

In concluding it may be appropriate to impress the habitual howlers and opponents to Chinese crews on board of our trans-Pacific liners that the "Manchuria" carries the much-despised Orientals, who are exemplary boatmen aside from the many other virtues which they possess, in preference to the so-called American sailormen, of which 95 per cent are of forcign origin and 90 per cent absolutely foreigners.

TRANS-PACIFIC BERTH

At a meeting of the Trans-Pacific Conference Lines, held in Portland on May 31, the ocean proportional of cotton rates to the Oriental ports was discussed, and it was agreed that on and after August 1 all regular lines, exclusive of the Japanese companies, would increase their tariff from 40c to 60c per 100 pounds. from Puget Sound and Portland.

INEXPLICIT RULINGS OF STEAMBOAT INSPECTION SERVICE

The April, 1913, edition of the General Rules and Regulations prescribed by the Board of Supervising Inspectors and approved by the Secretary of Commerce contains on pages 74 and 75, Section 6 Rule 3, the following, which becomes effective July 1, 1913:

Boats Required on Vessels of Less Than Fifty Gross Tons Not Carrying Passengers

All vessels of less than fifty gross tons navigating under the provisions of Title LII, Revised Statutes of the United States, not carrying passengers, shall be equipped with life boats or life rafts of sufficient capacity to accommodate at one time all persons on board.

Life Boats and Rafts Required on Inspected Motor Boats

On and after July 1, 1913, all vessels propelled by machinery other than steam, subject to the inspection laws of the United States, and carrying passengers, shall be required to have the same life-boat and liferaft equipment as steamers of the same class, and local inspectors shall so indicate in the certificate of inspection. This paragraph shall not apply to such vessels under fifty tons, when navigating in daylight only, and when equipped with air tanks under deck of sufficient capacity to sustain afloat the vessel when full of water with her full complement of passengers on board or when properly subdivided by iron or steel water-tight bulkheads of sufficient strength and so arranged and located that the vessel will remain afloat with her complement of passengers with any two compartments open to the sea; provided, however, that no such vessel shall be navigated without having on board lifeboat capacity of at least 100 cubic feet. (Sess. 4426, 4481, 4488, R. S.)

These rulings are not as explicit as they should be and must lead to misunderstanding and misinterpretation relative to motor vessels of under fifteen tons, which, as we know, are not subject to the rules and regulations of the Steamboat Inspection Service, but must be equipped according to the Act of Congress approved June 9, 1910, known as the motor-boat act. Motor boats of over fifteen tons have always been subject to the inspection rules and do not come under the motor-boat act.

However, insertions in the above ruling are essential to avoid all misunderstanding. As the rule now stands, a literal interpretation would mean that any one having a motor boat (irrespective of size or horsepower so long as under fifty tons), used either for pleasure or business would have to equip it either with a life craft or life boat.

Therefore all rules and regulations pertaining to the Steamboat Inspection Service should at least be framed so that misunderstandings and misinterpretations are absolutely impossible and prevent even temporary unrest in an industry which is expanding by leaps and bounds.

Increased wharf facilities are being sought to accommodate shipments from the interior in advance of steamers on which shipments are to be exported.



FREIGHTS AND FIXTURES

Messrs. Page Bros. of San Francisco send us a very excellent freight report this month, which we take pleasure in publishing herewith:

Very little activity has been shown in freight rates since our last report on the 2d inst. Owing to the possibility of a large number of tramp steamers heading this way with coal for the Government, our shippers, as a general thing, have practically withdrawn from the market, naturally expecting to charter at lower rates later. On the other hand vessels are not offering freely, as the owners of the coal-chartered steamers cannot tell where the United States Government intends to redeliver, it having the option of redelivery in the Far East, or at Australia or in the Pacific. Nor are they certain as to when they may have the steamers returned to them, as the Government has a maximum time limit of six months on their time charters. Again, September marks the beginning of grain exports from the North for Europe, and with the prospects of a crop as large or almost as large as last year's, owners with reason may look for a good demand for their tonnage for wheat and barley. The result, therefore, is that we have at present what we may well call a "guessing market."

Sail freights, foreign influenced by what we have just written and by the fact that Coast freights for lumber are neglected have receded from 2/6 to 5/ stg. per 1,000 feet board measure. We record the following steamer charters since our last:

Str. "Lord Derby" fixed at 33/9 Cork for orders. Wheat from Portland for June or early July loading. Previous charter a month ago for grain in the same direction having been the "Kina" at 31/3 for orders.

Str. "Hartington" or substitute from this Coast to Melbourne to load in August reported at 40/ net from California at 42/ net if she load at a redwood port, and also on the Columbia River or the Sound, taken by Gibson & Company, just started business here.

Str. "Arabian" chartered by China Import and Export Lumber Company, at 5/ on deadweight delivery at Portland, redelivery in Japan, one round voyage and one final trip over to the Orient. She is now here about ready to leave for Portland.

Str. "Ikala" chartered to load lumber to Hongkong and Manila at \$9.00 per 1,000 feet, prompt loading, by the Robert Dollar Company.

Str. "Crown of Galicia" just left Puget Sound in ballast for Newcastle in preference to taking what the owners considered too low a freight down to Australia. From Newcastle she is fixed for coals on private terms to Valparaiso, Chile.

St. "Rothley," now in Australia, brings coal from Australia to this port at a comparatively low freight, thus enabling her to fill an old charter at 8/ on deadweight about August, loading from Puget Sound to Australia, which was well worth the sacrifice owners make on the coal charter up, her present value down being about 5' on the deadweight, a difference of about \$4,500 per month.

Str. "Craighall," with sugar from Cuba to Vancouver, gets a freight of 35/ per ton on weight delivered.

The interest taken by the Great Northern Railroad on Vancouver Island is soon to be further demonstrated by the inclusion of the port of Victoria, B. C., in the lists of ports of call for the S. S. "Minnesota."

LIST OF STEAMERS REPORTED FIXED BY UNITED STATES GOVERNMENT

We append a list of the steamers for the Government fixed on time charter at rates of freight ranging from 5/3 to 6/3 on the deadweight per ton per month:

	Net. Reg.					
"Spithead"	2,993	August/September				
"Earl of Elgin"	2,811	August/September				
"Earl of Douglass"	2,761	August/September				
"Coila"	2,552	August/September				
"Bellorado"	2,900	August/September				
"Bellucia"	2,786	August/September				
"Arrino"	2,843	August/September				
"Anglo Californian"	4,700	August/September				
"Strath"	2,830	August/September				
"Border Knight"	2,3 93	August/September				
"Damara"	3,219	August/September				
"Crosshill"	3,126	September/October				
"Navarra"	2,847	September/October				
"Largo Law"	2,541	September/October				
"Falls of Nith"	3,021	September/October				
"Epsom"	2,970	September/October				
"Queen Louise"	3,139	September/October				
"Peebles"	2,732	September/October				

What an example we are again shown by the above list of foreign steamers which our Government has chartered, thereby breaking its own coasting laws. If the Government objects to paying higher freight rates to American steamers, what do our merchants think about the matter? It isn't fair. After all, it's the fault of our Government that it is more expensive to ship freight on American vessels, and does it not thus appear that they not only "do not practice what they preach" but also shift the burdensome results of their folly in making navigation laws which make it impossible to compete with foreign owners to the shoulders of the American shipowner?

Every time the United States Government charters a fleet of foreign vessels to carry our own coal to ships of our own navy, it is like tearing open an old wound and makes us wonder once more why changes favoring our shipowners and our flag are not made in our navigation laws.

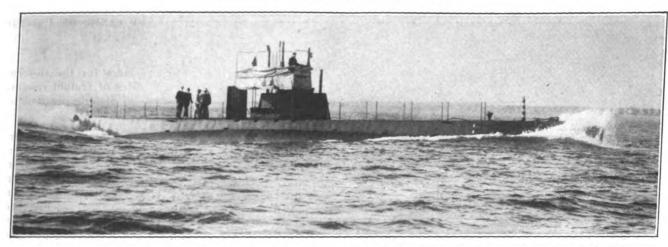
NEW JAPANESE TRANS-PACIFIC LINE

Beginning with September 1, it is reported, Suzuki & Co., importing and exporting merchants of Moji. Japan, will further enlarge their services by placing five steamers flying the Nipponese flag on the regular route between Japan and the North Pacific. It is announced that the vessels will be the "Naukai Maru." "Shinsei Maru," "Fukoku Maru" and two others recently purchased by the company.

Each of the steamers has cargo capacities of between 6,000 and 8,000 tons. Coming this way they will bring general cargo; returning to the Orient they will carry flour and wheat, loaded principally on the Columbia River. Suzuki & Co. operate flour mills in Japan. The mills are located at Moji and are the largest in the Orient, turning out about 3,000 barrels of flour per day when running to capacity.

The wheat taken from this side of the Pacific will be used for keeping the plant in operation. In addition to the wheat, the company will purchase flour to supply its Oriental trade.





SUBMARINE "F-4," EQUIPPED WITH TWO 400-H.P. SIX-CYLINDER NLSECO DIESEL HEAVY OIL ENGINES

THE NLSECO HEAVY-OIL ENGINE

ONLY AMERICAN-BUILT MARINE DIESEL

WHILE a comparatively recent development, the NLSECO engine, built by the New London Ship and Engine Company of Groton, Conn., is in no sense experimental. It was developed by the Maschinenfabrik Augsburg-Nurnberg Company of Germany. This large and well-known firm has been building internal combustion engines of various types for many years. Their great success and eminence in this general line is best evidenced by the many thousands of engines built by them, which are in successful operation in all parts of the world, and daily developing hundreds of thousands of horsepower. As the marine engine in question is the product of years of experience and experiment, its success is not surprising. This success has been amply demonstrated by the engines which have been built and which are now in practical use in various parts of Europe, where they are employed for the propulsion of many types of vessels in the European navies and merchant marine.

Briefly described, the engines offered are single acting and work on the two-stroke cycle with combustion of the liquid fuel under constant pressure. This principle embraces certain fundamental advantages which are not to be found in oil or gasoline engines working on the so-called Otto principle.

It should be noted that the NLSECO engine is entirely free from the shocks to which the ordinary Otto cycle engine is subject, where the combustible mixture at a pressure of from 50 to 75 pounds is exploded, with an instantaneous rise in pressure to 300 or 350 pounds. Such sudden shocks, occuring at each working stroke of each cylinder, subject all parts of the engine to rapidly recurring stresses fluctuating in value and sign. The inevitable result is a short-lived engine, which, particularly in the larger sizes, is subject to sudden breakdowns, due to the failure of even the best material under constant vibratory stresses of unknown magnitude.

In this engine, on the other hand, no explosion whatever takes place. The engine is not an explosive engine, but a true internal combustion engine, the pressure in the cylinder never rising above the compression pressure. The load is therefore taken on gradually and gradually relieved, so that the engine operates without shock. The above special features, combined with the use of the best materials and high-grade workmanship, account for the reliability, durability

and all around serviceability of these engines, which taken with their moderate weight, small size and great economy of fuel, constitute their most important advantages.

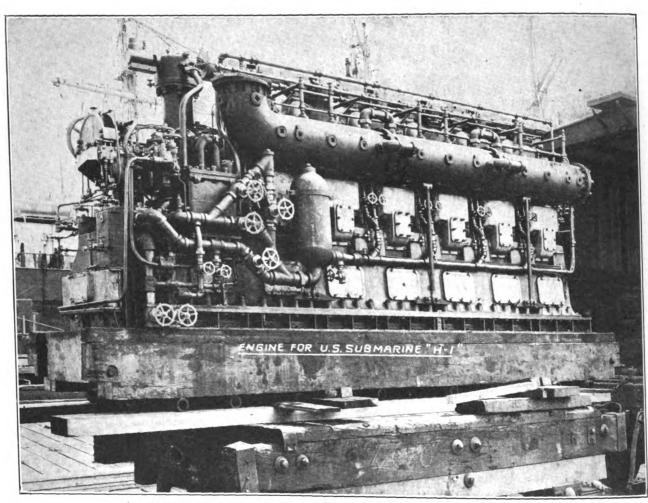
The fuel consumption per horsepower varies slightly with the size and speed of the engine, being lowest for large and slow-speed engines and a little higher for small and high-speed engines. A fair average fuel consumption is .5 pounds per brake horsepower per hour. The average specific gravity of ordinary fuel oil is .89 equivalent to 7.4 pounds per gallon. The fuel consumption, therefore, amounts to .54 of a pint per horsepower hour. The average price of such oil is 2 cents a gallon, making an average fuel cost of less than 2 mills per brake horsepower hour.

Compare this with the cost of gasoline or steam power. With distillate at 81/2 cents a gallon and an average consumption of one pint per horsepower hour, the cost is seven and one-half times as great. With coal at \$5.00 per ton and a consumption of 2 pounds per horsepower hour the cost is 0.486 cents, or about two and one-half times as great. This comparison relates only to fuel cost; there are other important economies which will be mentioned later.

While these engines may be operated on crude oil or on kerosene, their natural and best fuels are the cheap and intermediate products of oil refineries and gas works, known commercially as gas oil, fuel oil, etc.

Except in special cases, the use of kerosene is prohibited by the cost, even though the power so obtained is cheaper than gasoline power. Crude oil is undesirable, as it is often contaminated by mineral elements and asphalt, and moreover, still contains the volatile elements—gasoline, etc.—and hence cannot be handled and stored without danger of fire and explosion.

On the other hand, the above-mentioned fuel oils are cheap and safe, and there is an abundant supply. The supply is so great and the demand so small that there is no danger for years to come of its use in internal combustion engines seriously affecting the The annual production of this oil is over 5,price. 000,000 tons. The only use thus far found for it has been as fuel. The following information is given to indicate the underlying reason for the large supply and low cost of this material.



450-HORSEPOWER NLSECO DIESEL ENGINE-EXHAUST SIDE

When crude oil is extracted from the wells it contains a mixture of a large variety of hydrocarbon compounds. The nature of this mixture depends largely upon the locality of the well. Generally speaking, the crude material is put through a process of fractional distillation. During the first stages of this distillation, volatile products are given off at comparatively low temperatures. These represent less than 1 per cent of the original matter. Upon increasing the temperature of distillation from 140 degrees to about 340 degrees Fahrenheit, gasoline, benzine, naptha, all of which are commonly known as gasoline, are obtained and the total amount thus given off is only from 10 per cent to 15 per cent of the original material. The next product from 340 degrees and above is kerosene or ordinary lamp oil of various qualities. The total amount of kerosene is about 50 per cent of the original mixture. Finally, lubricating oil, paraffine wax and solid residue are obtained in small percentages. Now the fuel oil above discussed is a form of kerosene which comes off after the higher grade sold as lamp oil. It is, however, not suitable for ordinary use as lamp oil on account of its color and other properties, and it is not worth further treatment on account of the large supply of suitable kerosene. It will be seen that this fuel oil is a large percentage of the crude, and as it has only a limited use, the reason for its low cost is apparent.

Ultimate Economy

Enough has already been said to show that with respect to fuel cost these engines are much more eco-

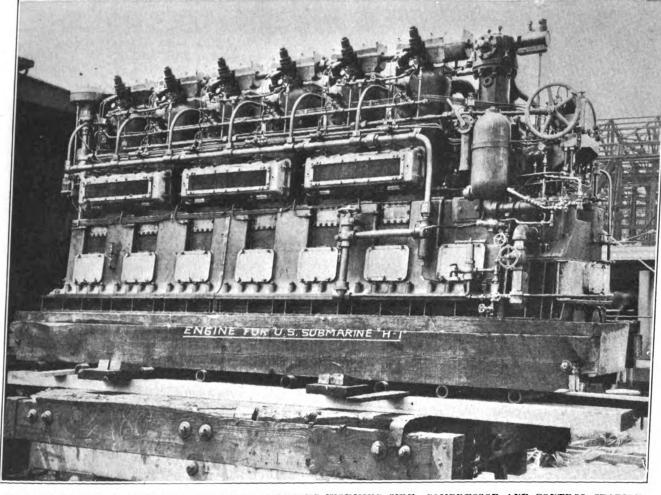
nomical than gasoline or steam engines. There are, however, many important features affecting ultimate economy, which must be considered..

These are: (a) First cost; (b) fuel cost; (c) cost of attendance; (d) cost of repairs; (e) rate of depreciation, or durability; (f) cost of supplies—oil waste, etc.; (g) weight and space required for machinery installation, including fuel storage and living space, etc., for the engineer's force.

On comparing the smaller sizes of the NLSECO engine with a high-grade gasoline engine, it will be found that there is substantial equality as to items c, f and g, while in all the remaining items, except first cost, the advantage lies with the heavy-oil engine. In this case the difference in fuel cost is so enormous as to overshadow the other economies, which therefore do not have to be considered in determining the inferiority of the gasoline engine. This is best indicated by a concrete example. The following conservative figures are given for a 100 horsepower installation:

Specific Gravity	Lbs. per gallon	Cost per gallon	Lbs. per H. P. hou	Gals. per at 100 H.	Cost per l
	•		7	44	P. 70
	:			: 2	· E
				: =	: न
	· :				
.77	6.47	\$0.08 1/2	.80	12.5	\$1.06—Distillate
.89	7.04	\$0.02	.50	6.7	\$0.14-Fuel Oil

Saving per hour, \$092. Saving per year, running 300 days at ten hours per day=3,000 hours, \$2,760.00.



450-HORSEPOWER NLSECO DIESEL ENGINE, SHOWING WORKING SIDE—COMPRESSOR AND CONTROL STATION

In the above table, the cost per gallon of distillate at 81/2 cents and fuel oil at 2 cents is based on the average price on the Pacific Coast at the present time. While in certain localities these prices may vary, the relation between them will not change much.

This saving would soon more than make up for the difference in first cost, after which an enormous advantage would lie with the oil engine.

Larger-sized engines must naturally be compared with steam plants. An analysis of the factors here indicate equality in only one respect, viz: item e, durability. The first cost of the oil engine installation will generally be slightly greater, but in all other respects it shows material superiority over the corresponding steam plant. In this case also the difference in fuel cost alone is sufficient to offset the greater first cost of the oil engine, but even if this were not the case, the saving in weight and space required for the machinery installation and fuel would make the oil installation the more economical. For similar service, there is a saving of the weight and space required for machinery and fuel of from 40 per cent to 50 per cent, which is immediately applicable to an increase in the dead-weight carrying capacity, and cargo and passenger space. In other words, where the size of the ship remains constant, its gross carrying capacity increases and at the same time its running expense decreases. The ultimate economy thus affected is enormous, and may amount to as much as 20 per cent per annum on the capital value of the ship.

Regarded from another angle, the economy is equally apparent. Postulating the ship designer's problem as the provision of a given passenger and cargo space, and the carrying of a given load, at a given speed, for a specified distance, it will be apparent that by the selection of this engine instead of a steam plant, the objects sought may be accomplished on a smaller displacement and by an engine of less power. The first cost of the ship as a whole is thus reduced as well as the operating cost. This particular aspect of the matter should appeal with particular force to the yachtsman.

The New London Ship and Engine Company is the first firm to produce the American-built marine Diesel engine. This firm manufactures both high- and lowspeed engines of the two-cycle, directly-reversible type, and have made Government, commercial and yacht installations that are showing such substantial economies in operating costs that many Pacific Coast owners of merchant ships are now considering this form of power for new vessels they will build. Their Pacific Coast offices are at 24 Colman Dock, Seattle.

The teacher was giving a test on the value of foreign money in America. When it was little Harry's turn, she asked: "Harry, how much is a guinea worth in this country?" Harry smiled and answered: "A dollar and a half a day.'

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THE OUTLOOK FOR HEAVY-OIL ENGINES

WE NOTE with satisfaction that Secretary Daniels of the Navy Department has decided to equip the Maumee with internal combustion engines, which heretofore have been installed only in small units and in the navy, with one exception, only in submarines. The Navy Department, after thoroughly looking into the question and examining all the different types of large heavy oil engines built in Europe, concluded a contract with the New London Ship & Engine Company, whereby that company will supply complete working plans for two large oil engines of the Nuremburg type.

The Maumee is to be an exact duplicate of the Kanawha, now building at the Mare Island Navy Yard, at a cost of about \$1,400,000.

This brief statement carries with it a great deal of significance, and intense interest will be centered on the development of these engines. Heretofore engines of this type developing 1,000 horsepower were considered large units. On the Maumee, a vessel of about 5,000 horsepower, it will require engines of about 2,500 horsepower each. It is doubtful if anybody but the Government could afford to undertake the building of such an engine of the type referred to, marking as it does such a step in advance of existing practice.

The adoption of internal combustion engines for propelling machinery is also complicated by the number of auxiliaries which are necessarily carried on an oil tanker, consisting of pumps, winches, steering engine windlasses, etc. It is customary to install an oil-burning donkey boiler for these auxiliaries, but in some vessels certain of these auxiliaries have been electrically driven. It will be interesting to see what the Navy Department will develop in the method of operating auxiliaries.

A considerable number of foreign vessels have been equipped with Diesel engines and developing as high as 2,000 horsepower, although the latter have not been in use a sufficient length of time to base an opinion on their merits.

The Navy Department is having built the "Fulton," a submarine tender with propelling machinery of the Diesel type of about 1,800 horsepower.

Leading builders in Europe are experimenting with engines developing 1,000 horsepower per cylinder. One of these has built a single cylinder engine developing 1,200 horsepower. It has been tried, but full trial data is not yet available. Another similar engine with a single cylinder to develop 2,000 horsepower is building but has not yet been tested. A third engine to develop 6,000 horsepower in three cylinders of the double-acting type, two-cycle, has been built and is being tested. This engine is for the German Navy and the details of construction as well as the trial data have not yet been made public. These large engines have cylinders from 32 to 40 inches, with 40 inches stroke and 150 revolutions, these dimensions being moderate and well suited to propeller efficiency

The heavy-oil engine has not hitherto merited consideration on account of the limited power that could be developed in a single cylinder, but with engines developing 1,000 and 2,000 horsepower in a single cylinder it will be readily seen that the possibilties of this type of engine have wonderfully increased, and the limits of its applicability extended infinitely.

In the recent Naval Number of the "Scientific American" Rear Admiral H. I. Cone states: "It now seems probable that none of the methods of propelling medium-speed naval vessels, which are forms of steam machinery, will endure. This in consequence of the remarkable development of the heavy-oil engines of the Diesel type in Europe." This statement, coming as it does from a man whose position and attainments place him in an enviable position in the engineering world, is very significant.

Marine propulsion at the present time is in a state of so-called unrest. The rapid development of the steam turbine, both with direct drive and by reduction gearing, the experimental electric drive and the reciprocating engine, all deriving their power from the steam boiler, will soon be ousted by the internal combustion engine. And why should it not be so? From the standpoint of the layman, why burn oil to make steam for use in an engine when the oil can be burned directly in the engine itself?

In other words, with each transition of power from one medium to another there is a loss of energy, in addition to a complication of machinery installation.

In comparing the efficiency of the Diesel engine with the steam engine the thermal efficiency should be considered. The mechanical efficiency is of no particular value in the case of the Diesel engine inasmuch as the fuel consumption of Diesel engines is plainly stated for their efficiency per effective horsepower hour.

THE TREND OF INVENTIONS

Over 1,200 inventions relating to internal combustion engines were received during the year 1912 by the British Comptroller General of Patents, Designs and Trademarks—this being an increase of 25 per cent on the figures for the previous year. Particular attention appears to have been paid to engines having radial and revolving cylinders; to carburetors and apparatus for supplying fuel to engines of the Diesel type; to starting apparatus, and to the use of cylindrical valves. Many applications were received dealing with the problem of converting heavy hydrocarbon oils into light oils of the nature of petrol (gasoline) for use in these engines.

THE INTERNATIONAL ENGINEERING CONGRESS, 1915

In connection with the Panama-Pacific International Exposition which will be held in San Francisco in 1915, there will be an International Engineering Congress, in which engineers throughout the world will be invited to participate.

The congress is to be conducted under the auspices of the following five national engineering societies: American Society of Civil Engineers, American Institute of Mining Engineers, The American Society of Mechanical Engineers, American Institute of Electrical Engineers, and The Society of Naval Architects and Marine Engineers.

These societies, acting in co-operation, have appointed a permanent committee of management, consisting of the presidents and secretaries of each of these societies, and eighteen members resident in San Francisco.



THE MOTOR COASTER "ISLEFORD" AND HER SEMI-DIESEL ENGINE

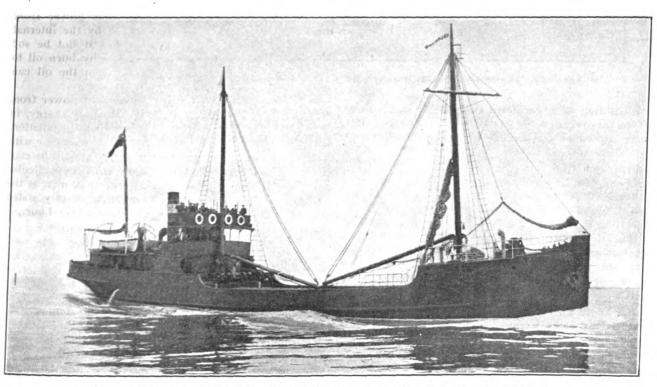
FOR SOME considerable time past, the attention of the whole maritime world has been centered on the application of the internal combustion engine to marine service and of late many important developments have been made in this direction.

One of the most recent installations of this type calls for perhaps more than ordinary consideration, showing as it does that the low-pressure, heavy-oil burning engine, or as it is more usually called, the Semi-Diesel engine, is as applicable to quite large powers as its more talked-of competitor, the Diesel engine.

The motor coaster "Isleford," of which the accom-

pure air ready for the next stroke. On the upstroke of the piston this air is compressed to about 150 pounds per square inch, and at the top of the stroke the fuel pump delivers a charge of fuel into the igniter bulb in the cylinder head. The fuel is ignited and burned, forcing the piston down again and giving a power stroke. This power stroke occurs once every revolution, instead of once every two revolutions as is the case with the four-stroke engine, considerably more power being thus obtained for the same bore and stroke.

The igniter bulk is, at the commencement of a run, heated by means of a lamp, but, the engine once



MOTOR VESSEL "ISLEFORD," IN COMMISSION FOR THE BRITISH ADMIRALTY

panying illustration is a photograph, has the distinction not only of being the largest motor coaster afloat but also of having the largest single-unit Semi-Diesel engine at present in service. As a result of her trials, she was purchased by the British Government. Built by the Ardrossan Shipbuilding & Dry Dock Co. of Glasgow, and classed 100-A1 at Lloyd's, she has a length of 149 feet B. P., a beam of 25 feet 6 inches, and carries 480 tons deadweight on a draught of 9 feet 11 inches beam.

The "Isleford" has a fuel oil capacit of 25 tons, a quantity sufficient for a voyage of over 3,000 miles. The engine, which develops in four cylinders 320 B. H. P. at a speed of 225 R. P. M., was manufactured by Messrs. C. and J. G. Bolinders of Stockholm, Sweden, and is an excellent example of the degree of perfection which these engines have now attained in their application to marine purposes. It is a two-stroke engine, the air used in scavenging the exhaust gases being drawn into the crank chamber and these compressed.

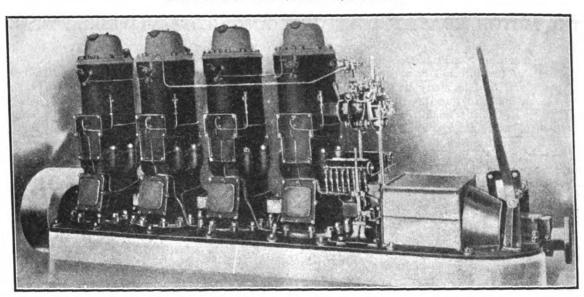
At the correct moment the piston uncovers a port in the cylinder, admitting this compressed air, which drives out the waste gases and fills the cylinder with started, the heat is automatically kept up without the aid of the lamp.

Starting is accomplished by means of the pressure obtained by collecting a portion of the exhaust gases in a steel container. To those familiar with the Diesel engine, a point in favor of the Semi-Diesel will be apparent in the absence of a high-pressure air supply, with its attendant difficulties, there bing no loss of power also, such as is required to drive the air compressor of the Diesel engine.

The absence of complication will also be noted from the photograph of the engine, due in great part to the entire absence of valves in the cylinder heads, and also of the cam shaft and driving gear required in four-stroke engines.

The results obtained at the trials of this vessel in February last speak for the economy obtainable from these engines, a fuel consumption of 18.5 gallons per hour being shown, or say .48 pounds per B. H. P. hour, the makers' guarantee being 23.6 gallons per hour.

This result means, naturally, a tremendous saving in the yearly fuel bill, and apart from this, admits of



FOUR-CYLINDER 320-HORSEPOWER BOLINDERS MOTOR INSTALLED IN 480-TON COASTING VESSEL

the utilization of a perfectly safe fuel, a fact which will be appreciated by those who understand the danger attendant on the use of gasoline or a highgrade distillate.

During the trial trip the motor worked without a hitch and was reversed without the least difficulty. With regard to the question of reversing the engine itself, instead of installing a reversing gear, it is interesting to note that the method of reversal adopted by Messrs. Bolinder's is entirely "fool proof," the reversal being obtained by simply throwing over a single lever, the engine automatically slowing down and then reversing, thus eliminating altogether the "personal element" in the shape of the engineer in charge.

That these engines operate successfully in Europe is an undisputed fact, as also is the question of the immense saving that can be effected by installing them in vessels hitherto operated by steam or gasoline engines. It remains to be seen whether they can find a market on the Pacific Coast.

It will be necesary, by actual trial here, to disperse the doubts that have so frequently been raised as to the adaptability of the Californian asphalt base oils for use in these engines, and this in spite of the fact that these oils have been shipped to Europe in sufficient quantities for tests to be made, which tests have been proved to be entirely satisfactory.

Again, owing to the heavy import duty, the first cost of these engines will, of necessity, be high, but on the other hand, the saving is so great that the question of first cost should not be allowed to weigh too heavily against not only the increased profits but also the absolute safety obtained by an installation of this description.

Lumber sailing vessels again are bound to benefit to a marked extent by having this type of motor installed as an auxiliary, being enabled to increase the number of trips made by about 30 per cent for a very small increase in operation cost, at the same time becoming independent of weather conditions and also of towage charges, a very important feature in these days of keen competition.

There seems, then, very little reason to doubt that the internal combustion engine will become as important a factor here as it is in Europe, and it is safe

to prophecy that the motor ship will, at no very distant date, become the rule, rather than the exception, in the harbors of the Pacific Coast.

THE DIESEL ENGINE IN FRANCE

The French authorities are convinced that the day of coal navigation is passing, although they cannot foresee just how soon oil combustion will take the place of the steam engine. M. de Rousiers, the very competent general secretary of the central committee of the shipowners of France, thinks this revolution will not be as speedy as is commonly thought, but he acknowledges "in all projects great account must be made of it for the near future." M. Japhet, subdirector of the French company Generale Transatlantique, is absolutely convinced that in fifteen years' time there will not be a ship using a pound of coalthere will be nothing but oil burners. And if France is allowing herself to be distanced by the merchant marines of other nations it is because of her difficulty in establishing mineral oil stores.

M. Douvry, the reporting commercial engineer, makes this comment, which concerns America doubly, for the American supply of petroleum may not keep up with the new demand. "Diesel engines (which are already being used extensively in Far East navigation) do not need mineral oil. They work quite as well with tar oils, which France is beginning to produce in great quantities in such coal mines of the north as Lens, and even with the earth nut (arachide) oil which is produced in such quantity in French African colonies." This may seem a novel idea to America, but it is an idea which is already becoming practical, and the only real question is one of time.

The engineer goes on to note: "At present, in England, there are under construction fifty big ships varying from 14,000 to 15,000 tons, which will use Diesel heavy-oil engines or others along the same line. In the trials made between England and America the expense was \$37,600 with oil and steam and only \$2,000 with heavy-oil engines. . . . England has already more than 300 ships with these oil engines, and while progress has still to be made for their adaptation to big ships the solution of the difficulties is near."

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A NEW INDUSTRY FOR CALIFORNIA

THE ENORMOUS dividends declared by whaling enterprises, which up to a year ago were as high as 100 and 150 per cent per annum, have lead to the promotion of many new organizations.

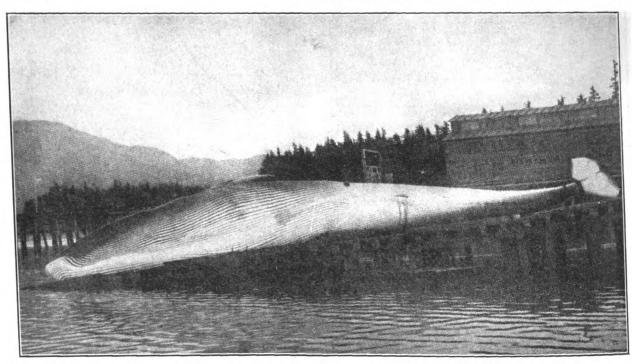
No statistics of last year's catch have been collected as yet, and as the oil and whalebone are almost always sold in foreign ports before the whaling vessels employed in off-shore whaling sail home, no

absolutely accurate figures are ever available.

In 1911, Norwegian whalers furnished 344,000 of the 625,000 barrels of whale oil sold in the world's markets, and gross returns were estimated at over \$6,500,000.

crew of 79, and the whaleboats have a crew of 10 men and a gunner. After calling at Montevideo to leave the whalers for the next season the steamer proceeded to Runcorn, arriving there on April 29.

At present there are about one hundred whaling plants in existence in the entire world. The majority of these plants are owned and operated by the Norwegians, who are considered the pioneers in this business. Other plants are owned in Scotland, some in New Foundland and Labrador; a few in Victoria, B. C., operating plants on Vancouver Island, and one at Grays Harbor, Washington. Two companies were organized last year in Seattle, operating this season in



A FEMALE FINBACK WHALE

The success of the whale "factory" steamer "Falkland," of 4,353 tons gross register and 400 feet in length, which has recently discharged in the Manchester Ship Canal the products of a whaling expedition in the South Pacific, and the "Normanna," which also arrived with a cargo of whale oil, is phenominal.

The "Falkland" is owned by a Norwegian company, and departed from Tonsberg on September 23, 1912, for the South Orkney Islands, where, on arrival on

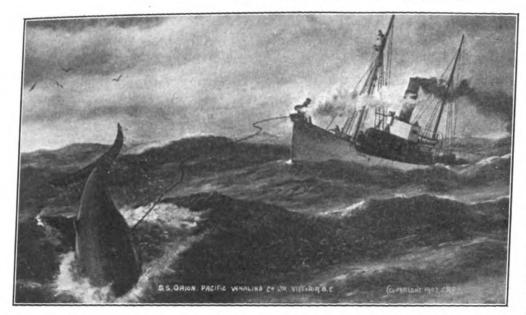
January 4, whaling operations began.

The blue whale is 105 to 110 feet long, and gives the greatest quantity of oil. The fin whale is 60 or 70 feet long, and the humpback 30 or 40 feet long. Three steam whalers of 400 to 500 horsepower each go in search of the whale. Fixed in the bow of each boat is a gun, fired with ordinary powder, from which is projected a harpoon with a grenade attached. The whales when captured are hauled alongside the whalers and inflated to keep them afloat. Upon four or five whales being thus secured they are towed back to the depot ship, where they are cut up and boiled down. The oil is allowed to settle for two days in a clearing tank and is then run off into the cargo tanks or barreled.

It took 369 whales to complete the cargo of the "Falkland," and this number produced 13,000 barrels, six of which go to the ton. The "Falkland" has a

Alaska. There is but one whaling plant in existence operating on any of the sea coasts of the United States, outside of Alaska, namely, the one built last year at Bay City, Washington, owned and operated by the American Pacific Whaling Company, with headquarters in Victoria, B. C. This company owns and operates several stations on Vancouver Island and in Southeastern Alaska, and according to all reports has been very successful. After operating only about four months last year at Grays Harbor, they decided to increase the plant and add two more steam whalers to the equipment. Most of the Norwegian plants are located in the Antarctic, South Shetland, South Georgia, Cape Horn, Kergulen Islands, East and West Coast of Africa, Tasmania, West Coast of Australia, New Zealand, Chili, and Galapagos Islands.

In view of the fact that the business is a very profitable one and that these Norwegians ship their supplies and products thousands of miles, in spite of the adverse weather conditions in localities where they operate, and in consideration of the fact that the products generally bring a less price than the price obtained for the same in the United States, why should not this very same business prove so much more profitable right here on the Pacific Coast, where the whales in certain localities are more abundant than in most parts of the world and where there is



a constantly increasing market for the products in our own country? We have a sea coast stretching from Cape Flattery to south of San Diego, about 1,200 miles, and on all this stretch of sea coast, with an abundance of whales, we find but one whaling plant, which was built last year at Grays Harbor, Washington.

Some whaling plants are located on harbors, the entrance to which is over a sand bar at the mouth of the river. In such cases it takes a whale boat under ordinary circumstances considerable time to get out to sea from the station,

and the same amount of time is also lost in returning to the station. In order to get out at all they have to consider the tides and a bar. If tides are not right or the bar rough, they have to stay inside and wait until opportunity offers to get out. If they are outside and bound in with a whale or two in tow the ame obstacles again present themselves. At night or in foggy weather they have to wait until daylight or until the fog clears off. All these obstacles mean loss of time; loss of time means loss of whale and consequently a considerable.

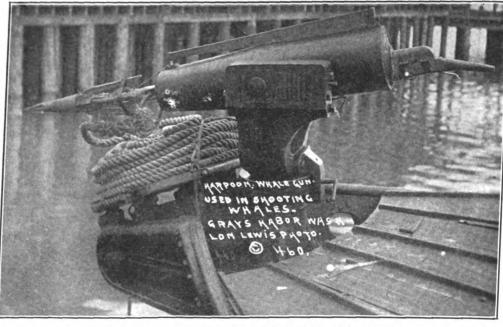
loss in the outut of the plant at the end of the season. In view of the above stated facts the West Coast Whaling Company has incorporated with a capital of \$500,000 and has chosen Trinidad as its port of operation, where a large and modern plant is now in course of construction.

Trinidad is peculiarly located and particularly favored for this very industry. It has no bar and is protected by Nature from nearly all kinds of winds. Whale steamers can go and come at night and in fog as well as during day and in clear weather. The harbor, although small, is plenty large enough for the

business, has deep water close in and it is the best sheltered outside harbor on the Pacific Coast. In another year the N. W. P. R. R., with extension along the North Coast at least as far as Trinidad, will be completed, thereby enabling the company to ship their oil in tank cars all over the United States.

At Trinidad this new industry is enabled to operate at least nine months in the ear, which is two months longer than the stations in more northern latitudes can operate, and weather conditions are much better

Trinidad is situated about 45 miles north of Cape Mendocino and 100 miles south of Cape Blanco. The prevailing winds, from early spring until late in the fall, are from the northward. This constant northerly wind creates a surface current setting to the southward, and Cape Blanco projecting further out than any other part on this Coast, naturally tends to form an eddy of these currents. This eddy or back current extends from Cape Blanco north of Trinidad to Cape Mendocino on the south. The current follows the 100-fathom curve, which is nearest shore at Cape



Blanco, Trinidad and Cape Mendocino, and it naturally deposits in this vicinity more or less food in the shape of small fish, crustacea, insects and other sea food on which the whales feed. It is theerfore a natural consequence that this feeding ground from Blanco to Mendocino attracts a large number of whales all the year around, and is thus ideal for the whaling business.

The matter is now pending relative to the inability of local exporters to place refined sugar in Tutuila due to the refusal of the United States Government to allow drawbacks.



PACIFIC MARINE REVIEW

THE PACIFIC COAST AND PANAMA

The development of our Western States and the new impetus that will be given them by the opening of the Panama Canal are discussed in a recent issue of the Deutsche Revue (Berlin). The writer, after a most suggestive comparison of the sharply contrasting civilizations of the Atlantic and Pacific nations of the globe, takes up the possibilities in store for our Western States and for foreign nations in connection with them, by the completion of the Canal. He says in substance:

The strongest expression of the self-consciousness of the American West is the plan of making the international exposition in San Francisco coincident with the opening of the Panama Canal. In the Eastern States little attention is given to the idea. Even leading circles seem scarcely cognizant of it, while their press is almost silent on the subject. Interest increases on entering the region of the Rockies and reaches its climax in San Francisco.

What seems the indifference of the East may be partially jealousy. For the East owns the railroads which want to hold the West and which may be compelled, on account of the Canal, to reform their management and radically revise their rates. The East has hitherto been the "middle-man" for the products of the West. The opening of the Canal may change all that. The East, finally, holds the political power. This will diminish in proportion to the increase of population and progress of the West.

In conclusion, the writer dwells on the new opportunities which the Canal will open up for Eurepean, and particularly German, trade with our Pacific States. The opening of the Canal, he says, will mean not so much the replacement of one trade route by another as a fundamental change in the economic position of our Far West, which may be expected, for the first time, to assert its commercial independence and seek its own connections with the world at large.

"The Pacific nations have recognized the significance of the moment. Japan was the first to appear on the scene in San Francisco and was followed by the western states of South America because they anticipate a repetition of their own progress. Haltingly the European nations stand back, and the American East is apparently indifferent. We cannot, indeed, tell what the Europeans can bring back from San Francisco, but one thing is certain-that success will come to him only who is right on the spot, becaues enterprises which are waiting to be developed may still be turned in one direction or another. I urge, therefore, that Germany be not found wanting at San Francisco. She must look upon the American West as a separate entity, and as belonging to the circle of the Pacific nations."

In an article in the Gegenwart (Berlin), special stress is laid on what the writer regards as the inevitable effect which the Canal must have upon our tariff policy. He says:

"Their absurd tariff policy has hitherto rendered it impossible for the United States to have a merchant marine. It is not to be assumed, however, that this condition will endure forever. It is probably, rather, that Uncle Sam, whose folly will be glaringly shown up through the new Canal, will change his commercial policy in such a way that he may be placed in a position to exploit in his own interest the favorable natural conditions which his vast country enjoys as

regards the shipping trade. The value and significance of the splendid position occupied by the United States between the two great oceans will be infinitely increased both for military and peaceful purposes after the work of piercing the Isthmus shall have been completed. Is it conceivable that the Yankees will not utilize the great advantages of a route, for example, from New York to Australia, shorter by three or four thousand miles? Since their present tariff would render the value of the future commercial routes illusory for them, it must be logically assumed that those able business men will bethink themselves, and by appropriate changes in the tariff secure a part of England's shipping trade."

HONGKONG'S GENERAL TRADE OUTLOOK

The prospects of trade in China and in Hongkong's trade territory generally at the opening of 1913 were the brightest for several years.

The inauguration of many reforms calling for modern equipment of various sorts, the establishment of various new industries in many parts of China calling for machinery of various kinds, development in other ways along foreign lines, and the introduction of foreign ideas and foreign goods promise increased imports from abroad and an increased and stimulated production of Chinese goods. While it is probable that exchange will decline materially, it seems likely that such decline will improve the situation, for while high exchange would favor imports from abroad the situation of China at the present time demands a good amarket at profitable terms for Chinese produce, and this can come only with lower exchange.

Stocks of nearly all standard goods in Hongkong are low, and buying upon a large scale will be renewed when more settled conditions obtain. Buying for the immediate needs of the market in any event will be material. The prosperity and advancement of the Philippines affect Hongkong trade directly and favorably, while improved crop conditions in Indo-China, Siam, Burma, and other points drawing upon Hongkong for supplies or distributing their products through Hongkong promise much for the year's business.

Shipping Statistics of Hongkong

The total of the shipping entering and clearing in Hongkong in 1912 amounted to 488,649 vessels of 36-735,149 tons, which compared with 1911 shows a decrease of 54,546 vessels but an increase of 555,997 tons. The decrease in the number of vessels was entirely in the local trade. Of the totals given, 46,603 vessels of 24,269,270 tons were engaged in the foreign trade as against 44,978 of 23,063,106 tons in 1911.

NO COALING STATION FOR HONOLULU AT PRESENT TIME

The chairman of the Board of Harbor Commissioners advises that while there is a possibility that the Territory of Hawaii will install a large coaling station at Honolulu, there is no appropriation to carry out any such plans for the next two years and therefore there is nothing definite to be said.







HARBOR LIGHT AT LOS ANGELES HARBOR

The accompanying illustration shows one of the most important mile stones in the progress of the Los Angeles Harbor. It is in a certain sense the consummation of the labors of the Los Angeles Chamber of Commerce extending over a period of twenty-five years. It marks the completion of the great breakwater and shows to the world that Los Angeles Harbor has officially arrived.

This lighthouse was completed March 1, 1913, at a cost of \$50,000, and is modern in every respect. The light is flashing white 140,000 candle-power, flashing every fifteen seconds, shows seventy-three feet above water from a gray cylindrical concrete tower. The illumination is of the fourth order, burning incandescent oil vapor. The fog signal is a first-class air siren, sounding thus: Blast two seconds and silent sixteen seconds, blast two seconds and silent sixteen seconds, blast four seconds and silent twenty seconds.

This light welcomes the mariner, not only to safe anchorage in stress of weather, but to the docks and commerce of a great maritime city of the future.

G. T. P. NOT TO EXTEND JUST YET

A great deal of publicity has been given a report that the Grand Trunk Pacific Railway Company intend establishing a steamship line between British Columbia ports and California. Mr. W. P. Hinton, General Passenger Agent of the Grand Trunk Pacific Railway, informs us that an inaccurate statement anent the inauguration of a steamship service to San Francisco was recently credited to various offices of the Grand Trunk Pacific at Seattle. Mr. Hinton writes:

"While we cannot say that such a service will not be inaugurated at some future date, we are not doing anything at the present time towards a San Francisco service. The service between Prince Rupert and Asiatic ports is, of course, to be looked for as soon as the G. T. P. transcontinental trains are in operation, and it has always been comtemplated that steamers of the G. T. P. should be put into the transPacific service. Nothing definite, however, can yet be announced as to plans in this respect."

DIVIDEND NOTICE

THE GERMAN SAVINGS AND LOAN SO-CIETY (The German Bank), 526 California Street, San Francisco.-For the half year ending June 30, 1913, a dividend has been declared at the rate of four (4) per cent per annum on all deposits, free of taxes, payable on and after Tuesday, July 1, 1913. Dividends not called for are added to the deposit account and earn dividends from July 1, 1913.

GEORGE TOURNY, Manager.

PACIFIC MARINE REVIEW

PORTS OF THE PACIFIC

By GEN. H. M. CHITTENDEN

Vancouver, B. C.

Seattle's greatest rival for commercial supremacy north of Portland and Tacoma is Vancouver, B. C., a rival whose strength lies not so much in its natural advantages as in the artificial conditions arising from its being in a different national jurisdiction. It has a good stragetic location, it is true, being at the outlet of the second greatest river of the Pacific Coast; but its harbor is inferior to those farther south, and its rail connections east, even to Central Canada, are inferior. Its early growth was due primarily to the fact that it was a Canadian port. That the port would have developed where, or as rapidly as, it has, if there had been no international boundary near by, may well be doubted. As conditions actually exist, however, taken with the present status of American navigation laws by which cheaper foreign shipping is excluded from our coastwise trade, Vancouver is a formidable competitor with ports farther south. In the fish and lumber export trade, particularly, conditions tell heavily in her favor.

Prince Rupert

Prince Rupert is the northernmost Pacific terminus of the transcontinental lines, and will remain so until some line shall cross into the valley of the Yukon and descend that mighty river on its way to the westernmost apex of the continent. It is forty miles south of the international boundary of Alaska (54 deg. 40 min.) and about 700 miles along the coast from Seattle and that much nearer Alaska. It is the westernmost, as well as the northernmost, transcontinental terminus, and is 500 miles (according to the statement of the Grand Trunk Pacific officials), nearer Asia than any other terminus on the Pacific. It is said that a traveler from China would be able to reach Winnepeg, via Prince Rupert, before he could reach Vancouver, if he were to go by that port. Add to this the fact that the gradient over the mountains, with the exception of about twenty miles of 1 per cent on the west slope, is everywhere under five-tenths, and most of the way much less than this, and some of the physical advantages of the route are apparent. Add again the proximity of Prince Rupert to the limitless wheat fields of Canada, the fact that it is in the very center of the salmon and whale industry, among inestimable quantities of virgin timber, and its great future seems doubly assured.

Its advantages are offset to some extent by the severity of northern winters, but chiefly by the different nationality of the territory (Alaska) which it is best fitled to serve.

Secondary Ports

Somewhat outside the rivalries of the great ports along the Coast, and flourishing on advantages which are peculiar to themselves, are several smaller ports. Among them, and the more prominent, are San Lius Obispo, about half way between San Francisco and Los Angeles; Humboldt Bay, on the North California Coast; Coos Bay, 200 miles south of the Columbia and serving an important section of Western Oregon; Astoria, just inside the Columbia Bar and the first port to be established on the North Pacific Coast; Grays Harbor, a great lumber port on the west coast of Washington, 45 miles north of the Columbia; and Victoria, an important harbor and naval base on Vanconver Island. There are numerous harbors on the

Alaskan Coast, but they are still in a state of Nature, as very little has been done toward converting them into up-to-date ports. The prospective opening of the coal fields of Alaska, and a more definite Alaskan policy on the part of the Government, will undoubtedly lead to the establishment of permanent facilities at some of these points in the near future.

Descriptive Data

In its physical characteristics the Pacific Coast line of North America increases in severity from south to north, but there is less diversity in climatic conditions than one might expect, for such great differences in latitude, owing to the moderating effect of the ocean currents. It is not until well up on the Alaskan Coast than one finds the harbors regularly sealed by ice in the winter season. Storms are more severe in the northern latitudes, but this is more than offset, as far as coastwise trade is concerned, by the sheltered inland passages which extend for at least 1,000 miles from Southern Puget Sound north. The tidal fluctuation increases from south to north from a mean of about 4 feet at San Diego to 14 feet at Prince Rupert. The teredo is very destructive in all the waters of the Coast, but the lininoria is active only in Californian waters. Nearly all the tributary streams are heavy silt carriers, and the primeval bays and inlets are partly or wholly filled up, making dredging a necessary adjunct of harbor development all along the Coast, and necessitating costly training dikes to scour channels across bars or shoals. In Southern California the immediate shores were originally lightly timbered; but from Northern California north they were covered with magnificent forests. The coast line is remarkably uniform and unbroken by indentations as far as the Strait of Juan de Fuca, but from there north the exact opposite is the case.

With these few observations on the broad physical characteristics of the Coast, more detailed consideration will be given to the several ports.

San Francisco Bau

The Bay of San Francisco (including, in that term, San Pablo and Suisun Bays), has a total area of 420 square miles and a shore line of about 350 miles. The area exceeding 30 feet in depth at low water is about 190 square miles. The extreme tidal range is 8 feet, and the mean is 4.3 feet. The tidal currents are strong in the Golden Gate and Carquinez Straits, amounting to seven miles per hour at spring tides. The entrance to the bay is about one mile wide and very deep, and is guarded by formidable defenses. In a half circle about the entrance on the ocean side, and some six miles distant, is a narrow bar with a ruling depth of 30 feet at low tide and two crossings of over 40 feet.

The heavily silt-laden streams—the Sacramento and San Joaquin, with a water-shed of more than 60,000 square miles, extending 400 miles along the western slope of the Sierra—have brought down immense deosits into the bay and are progressively reducing its area. It once extended far up the valley of each stream, but is now practically limited to the area below the Straits of Carquinez, for Suisun Bay is shoaled up so as to be of little use for navigation except on the through channel to the rivers above. The deposits have also invaded the Lower Bay and have shoaled the depth, over two-thirds of its area, to less than 18



fect. Due probably to the action of the inflowing tides, this shoaling has been forced mainly on to the east side of San Francisco Bay and the north side of San Pablo Bay, leaving the east shore, where Oakland, Berkeley and Alameda now stand, quite unapproachable in their natural condition by any craft larger than a rowboat, while the shore of the San Francisco Peninsula has practicable depths for the largest shipping close in to the bank. It was mainly this condition that made the Port of San Francisco Bay develop where it did instead of on the east shore. Now that reclamation work is utilizing the shoal areas to make new lands by dredging out deep slips, shipping will gravitate more and more to the east shore in order to avoid ferry inconvenience.

The shoaling of San Francisco Bay is one of those great natural blessings which the unthinking are so accustomed to look on as a curse. One-tenth of its natural area, with deep connecting channels, would serve every possible need of commerce, while the other nine-tenths would be of immeasurably greater benefit reclaimed and turned to industrial or agricultural use. Every cubic yard of earth washed down from the rugged slopes of the mountains is worth a thousand times more in those low areas, where it is turned to efficient use in the service of man.

San Francisco Bay is perfectly sheltered from ocean storms, is not subject to flood effects except in the extreme upper portions, at the outlet of the Sacramento and San Joaquin Rivers, and is absolutely free from ice. There were originally several dangerous rocks in the channels, but these, for the most part, have been removed, the most important removal being that of Blossom Rock. In practically all respects the natural advantages of San Francisco Bay are of the highest order, and, if its human custodians are faithful to their trust, it is destined to remain for a long time the leading port on the Pacific Coast.

San Francisco proper and its port grew up on the narrow peninsula lying between the southern half of the bay and the ocean, south of Golden Gate. As far as land communication to the north and east is concerned, the city is practically an island, and has to rely exclusively on ferry service. The water-front development extends from the northeast extremity of the peninsula around into the bay, and as far south as the city and county boundary. The jurisdiction of the Board of Harbor Commissioners stops short at this point, which fact is clearly indicated on Plate X published in the June issue of the Pacific Marine Review. At present the berthing space for all classes of vessels aggregates more than 10.5 miles. The several ferries to the east shore and other points land near the foot of Market street, and carry 125,000 passengers daily. Exclusive of fairways or forbidden anchorage, there is, approximately, 100 square miles of available anchorage ground in the bay.

Dock construction consists of three classes: Entire wooden construction, concrete subconstruction only, and complete concrete construction. Much trouble has been experienced with subaqueous concrete work probably due to defective methods or inspection. Nearly all the sheds are built of wood, and their areas vary from 60,000 to 84,500 square feet. The state owns no drydocks, but there are two privately owned graving docks at Hunter's Point and two floating docks at the Union Iron Works plant, besides the Naval Dock at Mare Island.

San Francisco is the only port on the Coast at which

any great amount of permanent sea-wall construction has been done. Work of this character has been carried on for the past twenty years. In that time, including work now in progress, nearly 13,000 lineal feet have been built, at costs ranging from a little less than \$100 to about \$270 per lineal foot. The construction of the sea-wall has resulted in reclaiming more than twenty-five acres, from which the annual rental now amounts to about \$1,000,000, or considerably more than half the total revenue of the port.

The port's funds are derived from its regular revenues (rents, wharfage, dockage, tolls, etc.) and the sale of bonds. The regular revenues, from the beginning of the Board's operations in 1863, amount in round numbers to \$28,500,000, and the funds from other sources, mainly bond sales, including recent issues still unexpended, to about \$12,000,000. The expenditures for construction and repair amount approximately to \$22,000,000, exclusive of the recent \$10,000,000 bond issue. The running expenses of the port (salaries, law fees, etc.) amount to an average of 21.4 per cent of all the disbursements. The total Federal appropriations for removing obstructions from the harbor amount to \$516,000, so that the total outlay on the harbor, including recent bond issues, will be about \$32,500,000. This, of course, is not all represented in actual present results, for much of it was for early work which has since been replaced, existing work probably not representing a present cost exceeding \$10,000,000.

It is important to note that approximately one-half (of late years more than one-half) the revenue comes from ground rents, without which much larger bond issues would have been required.

The trade of San Francisco embraces every class of commerce that passes over the Pacific Ocean. The Government Transport Service on that ocean largely centers there, and the chief naval base of the Pacific Coast is at Mare Island in San Pablo Bay. In many other respects San Francisco stands far in the lead of any other port on the Coast.

Oakland and Alameda

The physical characteristics of San Francisco Bay, of which Oakland and Alameda occupy the east shore. have already been described. The distinctive east shore harbor is the San Antonio Estuary, which lies between Oakland and Alameda and extends entirely around the land side of the island on which Alameda is situated. It is referred to in Government reports as Oakland's inner harbor. A channel leads in, from deep water in the Bay, between jetties 800 feet apart. which also serve as moles with ferry slips at the ends. The channel, as developed under the Government project now in force, will be 500 feet wide and 30 feet deep to a large "tidal basin" about opposite the center of Alameda, with a channel 300 feet wide and 25 feet deep entirely around the basin, and a depth of 18 feet in the "tidal canal" connecting the basin with San Leandro Bay, an inlet of San Francisco Bay on the southeast end of Alameda Island. This magnificent inner harbor has a shore line on each side of about 7 miles. On the Oakland side there is approximately 10,000 feet of berthing space for deep-sea vessels and 16,000 feet for smaller craft. The harbor is a great industrial center, some of the largest plants on the Bay being located there. There are four dry docks.

From the point of junction of the Estuary with the Bay, the shore line to the north is occupied by transcontinental railroad terminals and shops of ferry lines.

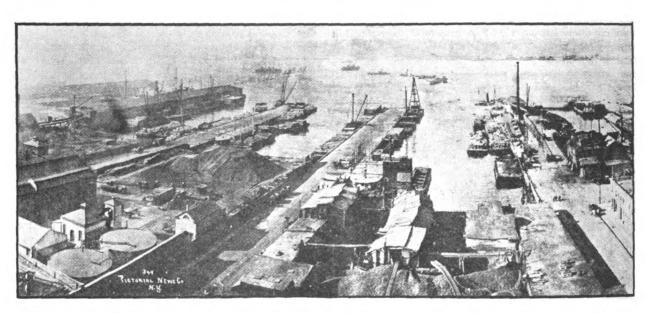


In this stretch of about two and a half miles frontage is the so-called western water-front on which the Municipal Government is making improvements.

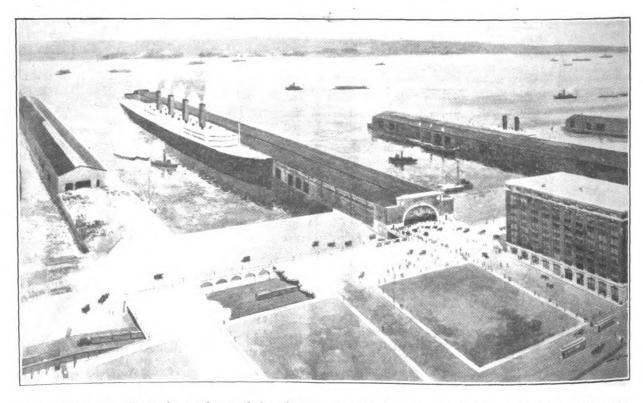
The port's revenues come from tax levies, bond sales, rentals, fees, etc.

All along the east shore, and at many other points on both shores of the Bay and of San Pablo and Suisun Bays, there are wharves and industrial establishments of one kind or another, of which only mention can be made here.

(To be continued.)



This photograph shows the pier at the foot of West Forty-fourth street, New York, now used by the French Line. The remainder of the territory needs no description. It conclusively shows the unimproved locality, which is in a dilapidated condition. It represents a loss to the city as it now exists.

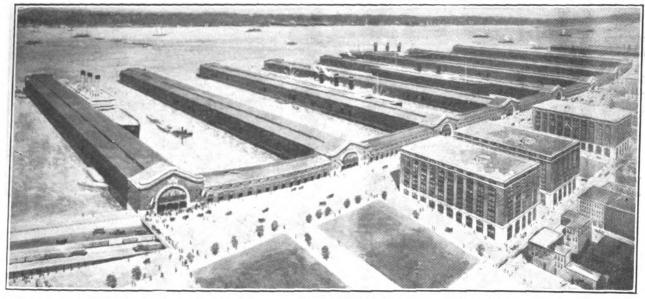


This illustration shows the territory of the photograph, picture No. 1, as it will appear when improvements are completed. It shows a full slip nearly 1,000 feet long on the northerly side of the French Line pier at the foot of Forty-fourth street. It also shows a slip between piers at the foot of Forty-sixth street, 360 feet in width. This is a greater width by sixty feet than any other slip on the Manhattan water-front. The width of the pier itself is 150 feet, which is twenty-five feet wider than the Chelsea piers. The



slip to the northerly side of the pier at the foot of Forty-sixth street will also be of 360-foot width. The pier at the foot of Forty-sixth street, as shown, has a slip-length of 1,000 feet, but the shed is 1,200 feet long. It shows the ground which will be occupied for storage until there is a demand for a slip longer than 1,000 feet. This space will produce revenue to the City of New York either from steamship companies occupying the piers themselves or from commercial enterprises. Back of this 200-foot strip, or east of the present bulkhead, there is a marginal street 50 feet in width. Easterly of this marginal street is shown the new street over the New York Central tracks with access to the second deck

of the piers. In other words, the lower deck of the piers will be used for general cargo and the upper deck for passengers' baggage and such other uses as the steamship companies desire to make of it. The space below will not only permit of the four main tracks of the New York Central, but provision is made for two additional tracks to be used by any of the other railroads desiring access to the new steamship terminal. The purpose of the Dock Department is that the territory, with the exception of the through tracks and such access as the New York Central shall have to the piers, shall be enjoyed by every other railroad entering the City of New York, entirely independent, if necessary, of the New York Central lines.



This is an illustration of how the territory north of Forty-sixth street, New York, may be improved, gradually, to meet the demand of commerce and to be continued, relatively, with the city's financial ability to do so, by which the City of New York may preserve its supremacy as the first port of the world. The principal object of this illustration is to conclusively show the wisdom of the policy of the present administration in relocating Twelfth avenue sufficiently far inland to make this steamship terminal possible and at the same time to protect all interests, whether they be land owners, manufacturers or commercial enterprises. To permit Twelfth avenue to remain where it is would ruin this location for all time to come for a modern steamship terminal. It would not permit the building of piers longer than those now existing at the Chelsea section.

WHAT'S IN A NAME?

By BILLY B. DAMM

In a manner of speaking, the Bard of Avon called the turn in "Othello" when he remarked, "He that filches from me my good name robs me of that which not enriches him and makes me poor indeed." But it must be a good name, and opinion differs as to what constitutes a good name. Now, there's Orlando Dammit, of Elmsford, N. C. He wants the state solons to change his. The jokesmiths, wanting to heckle Orlando, ask why.

I ask Dammit, why not? Dammit, why not? I'd change it. Let's see: O. Dammit—Orlando D. Mit—O. Mit—I can't get it, Dammit. But cheer up, Dammit. Dammit, cheer up! Say, Orlando, supposing you—It's no use, Dammit; see the legislature, but steer clear of those lobbyists Blankitt and Dashitt.

Your not alone, Dammit, in your difficulty. We once knew a grocer—nice fellow, but a little light weight—whose sign read: "A SCHWINDLER." He really wasn't, but folks kept saying so. It was sug-

gested that he get a new sign and spell out his Christian name, the first in ancient history. The new sign he nailed up read: "ADAM SCHWINDLER."

You certainly haven't forgotten the Dam family. Giv. A. Dam, fat Willie Dam, Lena Dam and Godfrey Dam? Think of this crowd going to hear Wagner's opera of "Goetterdaemmerung"!

Gretchen Schwein, in my home town, up and married Milton Hogg, and the envious began to wonder how she could have made a Hogg of herself.

Helga Johansen went to school with me—a real nice, jolly girl, and we called her Helga. Some of us fondly called her Hel—just like Liz for Lizzie, and Gwen for Gwendolyn. We'd see a girl down the street starting off for school and Tommy Rott would say: "Billy, that looks like Hel!" Well, she did and she didn't. Many of the fellows would go to Hel with their troubles, she was that sympathetic. She afterward married a chap named Biers, who drank himself to death.

There's lots in a name, depending on the point of view. I knew a man who gave his to seven different ladies. When he had done his six years he told me that he had made up his mind to settle down—he'd already settled up with the irate seven—and get married.

Traugut Walsingham's mother named him after her grandfather, so that the boys couldn't nickname him. They called him "Gutsy" his first day on the street.

What's in a name? You can search me, as Blink Boffum said when asked where all the bugs went in wintertime.—"Power."

TOKYO HARBOR PROJECT

The "Far East," published at Tokyo, Japan, comments editorially in a recent issue on the Tokyo Harbor Project.

Our contemporary states that this plan has been before the country for the past twenty years. The municipal authorities of the city have repeatedly considered the question and approved it, and in 1906 a most enthusiastic meeting of the leading citizens gave the scheme their support. This was on the eve of the financial crisis, and it was found impossible at that time to prosecute the financial part of the scheme, which involved raising money abroad to the amount of at least thirty million yen. Meanwhile, despite serious financial obstacles, the authorities have not been idle. The least costly part of the work has been undertaken-the reclamation of the waterfront, and the municipal council is now considering the dredging of the fairway from Cape Haneda. The depth of this fairway, for a distance of over five miles, is to be twenty-five feet-in official figures the length of the fairway if 4,990 ken-at low tide, and the anchorage for vessels between Shibaura and Echijima, an area of 1.143.110 tsubo or square feet, is to be dredged to three depths, 25, 20 and 15 feet. According to the engineer in charge of the work, however, statistics of vessels entered and cleared at Yokohama for one year showed that 90 per cent of vessels arrived had a draught of less than 24 feet, and this official is in favor, when dredging is begun, of a depth of 30 feet in the deepest part, and in other parts of the anchorage of 25 and 20 feet respectively. The progress of the harbor work, now it has gone so far, is essential for the credit of the city. The creation of a special board is considered to be equally essential, for the city is without funds to prosecute the work on a great scale, and another big long-term loan is among the difficulties that have got to be faced.

The experience of Osaka must act as a deterrent to the more cautious of the city fathers. To make a great port of Tokyo has been the dream of many of the leading public men of the city, who have ignored the position of Yokohama, or considered that there is room for both. Osaka is just beginning to get a little, a very little, of the trade that flows through Kobe-Tokyo's position with a completed harbor might be better or worse than that of Osaka. The opposition to the scheme has in mind also the experience of the Keihin Canal Company. This was formed a few years ago with the object of conveying cargo from Yokohama to Tokyo, avoiding the dangerous sea passage round Cape Haneda, and doing the work much more cheaply than the railway. The Japanese promoters have been unable to finance this scheme, which in the practical result of getting cargo into

Tokyo cheaply and quickly has much to recommend it. The harbor scheme is an altogether grander project and appeals to the imagination, but it requires a still more heavy outley.

NEW DOCKYARD FOR JAPAN

The Mitsu Bishi Company has obtained permission from the military authorities to lay out a dockyard on Hikoshima, an island in the Shimonoseki Straits. The principal feature of the yard is to be a drydock, which is to be 370 feet in length, enabling it to accommodate vessels of 4,000 tons register. The growing importance of Moji as a shipping port justifies the enterprise.



The above photo is of particular interest since the departure from San Francisco of Mr. French, principal surveyor to Lloyd's Chief Surveyor Staff, and Mr. J. W. Isherwood, the originator of the Isherwood system of ship construction which is meeting with such remarkable success throughout the world. Both gentlemen made a host of friends here, and while their friends regret their departure, Mr. French and Mr. Isherwood have been sufficiently injected with the vaccine of the San Francisco spirit to make a prolonged absence impossible.

Reading from left to right: Mr. French, Mr. Isherwood, Mr. Chauncey M. St. John and Mr. Campbell McGregor, who is connected with the Union Iron Works Company, of which his father is president.

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PANAMA, THE AUSTRALASIAN ROUTE AND BIGGER VESSELS

THE INCREASE in accommodation of the principal harbors of the Commonwealth, and those of the Dominion of New Zealand, has kept pace with the growth of the ocean liner. The large schemes of improvement which are either in course of execution or under discussion by the harbor authorities of these over-sea ports, will enable them to receive ships of the largest type, which appear to be coming in the near future. The reports of shipping authorities in different parts of the world point very clearly to the fact that in a few years no harbor can be considered in the first class which cannot accommodate vessels 1,000 feet in length, and which has not a depth of 40 Two facts point to this conclusion. The construction of the Panama Canal-with locks 1,000 feet in length and with a depth of water of 41 feet-and the deepening and broadening of the Suez Canal to bring it up, if not to these dimensions, at least to something near them. In dealing with this matter of harbor improvements it is interesting to note that in Sydney and Hobart on the one hand, and Wellington and Auckland on the other, the Commonwealth of Australia and the Dominion of New Zealand have each respectively two ports, at least, which are up to date in every way and which can be navigated with ease by the largest over-sea vessels. It is fitting that Sydney, as the first harbor of Australia, should receive primary attention here, the entrance to Port Jackson has a least depth of 80 feet. Only one danger faces the navigator entering the port—the Sow and Pigs shoal-which divides the fairway into east and west channels. The eastern channel has been dredged to a depth of 35 feet at low water, and the bottom being sandy the depth can be increased in a very short time to practically what water that may be required. The western channel has been deepened to a depth of 40 feet at low water. After passing through the channels, which are about half a mile in length, ships are able to navigate in 40 feet to 50 feet to the new wharves and jetties between Dawes' and Millers' point. These berths will have depths ranging from 40 feet to 60 feet and will accommodate deep-sea vessels of from 600 feet to 700 feet in length.

At present the Union Steam Ship Company of New Zealand's new Clydebank-built 13,500-ton "combination" steamer Niagara, which sailed from Sydney on her maiden voyage to Vancouver on the 10th of June, is the largest passenger steamer running south of the line. In these days, however, record ships do not hold that proud position long, and very soon the Blue Funnel Line's "wholesome" looking 14,500-tonner, Nestor, will be steaming rapidly to the south'ard to claim a brief spell of the coveted honor until her rival appears. Commencing somewhere back in the sixties the White Star Line has, within recent years, developed its Australasian trade by vessels of the largest type running to the Antipodes. Within the last decade the development has been phenomenal through the introduction of such magnificent vessels as the 12,000-ton Harland & Wolff-built "Medic" class, and to merchants and the travelling public it will not be surprising to hear that a line so noted for its enterprise in the most important trade route of the Empire are building a steamer—the "Ceramic"—far surpassing in size anything hitherto placed on the Australian berth. The

"Ceramic," which is now nearing completion at Belfast by her builders, Messrs. Harland & Wolff, Ltd., is a triple-screw steamer, having the arrangement of machinery—i. e., twin-screw reciprocating engines combined with low-pressure turbine, already so successfully adopted in White Star vessels. The vessel will sail from Liverpool for Australia via Cape Town on her maiden voyage, probably in July.

The reasons for bigger vessels coming in for the Australasian services are not far to seek. Today both Australia and New Zealand present to the liner, other than the subsidized mail steamer, a dead end. For instance, a steamer of the passenger liner class arriving from this country at either Australia or New Zealand, after discharging her cargo at the various ports of call, is forced to wait her turn for homeward loading which, especially in the off seasons, involves much loss of time. This fact largely controls the size and number of vessels a company can run in its trade. It is, therefore, realized that Australia and New Zealand will both have their over-sea trade revolutionized by the opening of the Panama Canal. In the case of the New Zealand over-sea liner, instead of possibly waiting weeks and steaming hundreds of miles between ports picking up cargo, as she does today, she will sail homewards on a time table date. The awakening of the Pacific will come with the opening of the great waterway, and as was the case in the Far East, there will on the ocean pathway amongst the islands of the South Seas spring up emporiums, at which the large liners will call both for the purpose of discharging and loading cargo, which will be distributed and collected by local steamships as commerce expands. It may also be predicted that many of the liners en route from Australasia to this country will fill their vacant spaces with cargo at the principal ports of the West Coast of South America-from Calloa northwards. The opening of the Panama Canal will certainly mean direct steamship lines between New York, Montreal, New Zealand and Australia, and also direct lines between Europe and Australia, via this waterway. Everything points also to these liners being not only big ships but fast ones.

The rapid growth of trade in recent years between Australasia and San Francisco and with Canada also points to the coming of larger liners. At present, the railway journey from the Pacific slope of Canada severely restricts Australasia's trade with Eastern Canada, although a fair quantity of goods reaches St. John's and Montreal. If, however, anything like the sweeping reductions expected in the American tariff on food stuffs is realized New Zealand and Australia will, no doubt, be finding markets for their butter and cheese in the Southern States of America as well as in Eastern Canada as soon as the Panama Canal is opened.

In conclusion it may be stated that the great development of the passenger traffic between the over-sea Dominions and this country, and the demand of ocean passengers for mammoth steamers and the most direct, newest and most interesting track, will create a competition which will compel many of the passenger lines to adopt the Panama route, at least on the homeward voyage.—Shipbuilding and Shipping Record, London, England.

PACIFIC MARINE REVIEW

MARINE INSURANCE NOTES

SALVAGE AND SALVORS

The report of a court decision, published in the last issue of the Pacific Marine Review, awarding salvage to the crew of a British war ship for services rendered to a merchant vessel, has caused much comment among underwriters and other interested in shipping, and various views have been expressed. So far as known, no claim has ever been made for the services rendered by a Government vessel to a merchant ship in distress, and it appears to be the common view that crews of public service ships should make every effort, without hope of reward, to assist disabled craft at sea. If salvage services are rendered by a merchant ship, or a tug, or by ships equipped solely for such a purpose, the owners of such vessel could establish a claim for salvage and in this the members of the crew would participate. Government ships are built at the expense of the whole people, and if valuable services are rendered to others it would seem only just that these services should be paid for and the burden on the people would be lessened by the amount awarded. But the dignity of maritime nations prevents, and rightly so, such a claim, and the services of all navies are freely extended to merchant ships in distress.

But does this mantle of dignity fall upon the various members of the crews? It is true that they are paid by the people at large, but they are paid to run the Government ships in Government service and to fight if called upon to do so, but this does not include services to strangers, which services are performed, in many cases, with risk of loss of life or injury. If crews of merchant ships are entitled to extra pay for salvage services rendered, why should not crews of Government ships have the same remuneration? There is no agreement in the articles to prevent this, and there is no statute law against it. They receive less pay than their brothers in the merchant service, and they run as great risks, and there would seem to be no reason why they should not be entitled to the same emoluments for services rendered outside of their actual duties.

The question of awarding salvage to crews of public service boats, such as fire boats, has frequently been raised. Most, if not all, cities prohibit by law the acceptance by the firemen, whether on shore or on boats, of any remuneration for services rendered. These laws, however, do not prohibit the municipality itself from making a claim, although there is no record of any such claim having been made. In one case where services were rendered by the fire tugs of a city to a ship on fire moored in another city in another state, although less than a mile distant, suit was threatened by the city owning the tugs, the claim being based on the fact that the tugs were obliged to leave their jurisdiction unprotected to render service in another state. This claim was finally withdrawn and the matter was settled amicably and to the satisfaction of all con-

cerned by the beneficiaries of the salvage service paying a substantial sum to the pension and benefit fund of the fire department. Here again, dignity, that of the city, was appealed to, and while the boat itself received no benefit from the services rendered, yet the members of the crew were indirectly handsomely rewarded.

Other cases could be cited where organizations of firemen have received substantial assistance in a monetary way for extraordinary services performed, while the equipment, whether ship, tug or land outfit, has not benefited.

The whole question of salvage is a complex one, but the rule is that when services of an extraordinary nature are rendered to others at sea, and the result of these services is a saving, those rendering the services are entitled to remuneration. Passengers on merchant vessels are, as a rule, not entitled to remuneration for services rendered to the ship they are on, although such services result in ultimate safety, the idea being that in giving such service they are working for their own lives and safety as much as for that of others. There are a few notable exceptions, among them that of the "Great Eastern," which is but little known.

The "Great Eastern" was a monster English steamship, representing the acme of luxury and the last word in sea-going equipment. That the ship and the 800 persons she carried was not completely lost was due to the accident that a certain American engineer happened to be a passenger on the boat at the time of its fateful yoyage.

Two days out from Liverpool the ship encountered a severe gale, in which her rudder pillar was snapped in two, part remaining attached to the steering gear, while the blade swung idle in the water. The sails were blown to ribbons, the boats were washed away and the great ship, absolutely unmanageable, rolled from side to side in the trough of the sea. Everything breakable was destroyed says the record. The cabin, besides undergoing the dangers arising from the crashes and collisions which were constantly going on, had shipped a great deal of water, and the stores were floating about in utter confusion and cuin. Some of the chandeliers fell down with a crash; a large mirror was smashed into a thousand fragments; rails of bannisters, bars, and numerous other fittings were broken into numberless pieces. The luggage of the passengers was lying in two feet of water, and, before the deliverance of the ship was effected, the luggage was literally reduced to rags and pieces of timber. Twenty-five fractures of limbs occurred from the concussions caused by the tremendous lurching of the vessel.

The officers of the ship made repeated attempts, between Friday morning and Saturday afternoon, to get control of the ship's motions, but these efforts all proved fruitless. One of the passengers, Mr. Hamilton E. Towle, an American engineer of ability and ex-

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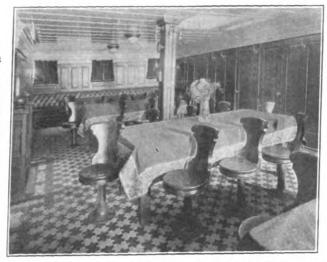
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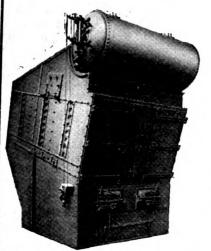
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perience, had watched these various attempts and had devised a plan of his own for getting control of the rudder. Naturally enough, his advice was impatiently rejected by the chief engineer of the ship. But when the engineer, at a loss what else to do, began to unscrew a nut which contributed to support the weight of the lower part of the rudder, Mr. Towle went to the captain to protest against what he considered a fatal mistake.

The captain, facing the danger of destruction, listened to the plans of the volunteer, ordered the official engineer aside and put the workmen under the direction of Mr. Towle, who, working all Saturday night and Sunday, succeeded in rigging up a temporary steering gear which was successfully operated, and by 5 o'clock on Sunday afternoon the ship was brought up to the sea and put on her return course. Besides her cargo she carried 400 passengers and about the same number as officers and crew. One can imagine the situation when the great ship really answered again to the helm.

Mr. Towle filed a claimed for salvage, and the case was decided in the District Court, Southern District of New York, by Judge Shipman, who awarded Mr. Towle \$15,000, the value of the "Great Eastern" being estimated at half a million. The difficulty which the case presented from the legal standpoint arose from the fact that Mr. Towle was a passenger, and that the ordinary rule in admiralty requires passengers to render what services they can to their ship in distress, without giving them a claim as salvors. Judge Shipman decided, however, that Mr. Towle's services were beyond the ordinary services which could be required of a passenger, since it would have been entirely out of the power of the ordinary passenger to perform them.

Other cases have been decided where passengers of a merchant ship rendering salvage services to another ship have assisted the crew in such service and have been awarded a part of the renumeration.

With such examples as these is there any reason why the "jackies" of the Navy should not receive extra pay for extra services performed outside of their regular duties?

GENERAL AVERAGE LIENS AND REMEDIES

Under the present methods of chartering ships and authorizing captains to sign bills of lading, whether or not in conformity with the terms of the charter party, it is extremely essential to see that this authority is not carried to excess. It frequently happens that charterers, perhaps not being familiar with the

terms of the charter party or not considering the trouble which may occur in signing bills of lading not in conformity with the charter party, and in the effort to get business, will authorize captains to sign bills of lading which are in direct opposition to the obligations to which they, as charterers, have bound themselves.

A case in point is that of the Field Line (Cardiff) Ltd. versus South Atlantic Steamship Line, which was decided in the Circuit Court of Appeals, Fifth Circuit, in December, 1912. The digest of this is extracted from the Federal Report. 201, page 301, and is as follows:

1. Shipping (No. 62)—Charters, Liability of Owners, Conflict Between Bills of Lading and Charler Party.

Where a charter party which does not effect a demise of the vessel provides that the master shall sign bills of lading when presented without prejudice to the charter party, the owner is bound to a shipper by the terms of a bill of lading so signed, although they may be in conflict with those of the charter party.

(Ed. Note-For other cases see Shipping Cent. Dig. Nos. 257-269, 313-315, 317; Dec. Dig. No. 62.)

2. Shipping (No. 62)—Charters, Rights of Parties. A charter party provided that the master should sign bills of lading when presented "without prejudice to this charter party." It was further stipulated, "Average (if any) in accordance with the York-Antwerp Rules, 1890," and such rules provided that "no jettison of deck cargo shall be made good as general average." The master, however, was required by the charter to sign bills of lading for certain consignments of lumber containing a provision that such rules should govern, "excepting that jettison of deck cargo (and freight thereon) for the common safety shall be allowable as general average," and did sign the same under protest. A part of the deck cargo covered by such bills of lading was jettisoned, and the shipowner was subjected to loss in general average, and, the other bills of lading containing no such exception, it could not call on the other shippers to contribute. Held that, while it was bound by such bills of lading as regarded the shippers, the rights of the parties to the charter were governed by its terms, and that it was entitled to recover its loss from the charterer.

The matter of inducing the Latin-American Republics to adopt a uniform Consular Invoice has been taken up by the Foreign Trade Department of the San Francisco Chamber of Commerce with Hon. John Barrett, Director-General Pan-American Union.



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INSURANCE AGAINST WAR RISKS

An association has recently been formed in London, known as "The Liverpool & London War Risks Insurance Association, Ltd.," for the mutual protection of members against loss by seizure in case of war between nations. Latest advices are to the effect that vessel property valued at about £30,000,000 had been entered.

It frequently happens that in case of war between two nations vessels of neutral nations are seized on suspicion that they are carrying contraband. Even if the suspicion proves groundless and the vessels are subsequently released the seizure carries loss and expense and it is to reimburse the owners for this that the association has been formed. If, however, Great Britain should be at war with another nation it is not the intention of the association to carry the actual war risk. In that event ships entered in the association would be protected against the risk of war only until they had reached a neutral port or the port of destination, after which the actual risk of war must be covered in the usual manner and through the usual channels. The entrance fee is ½d per £100 of the value insured and the cost of management is to be met by an assessment of 2d per £100 of value insured.

In case of claim arising it is presumed that same will be met by an assessment against the tonnage entered but it would seem to be rather difficult to arrive at an equitable basis of assessment. Trade routes are diversified over the entire globe and "danger zones" would be comparatively small, yet it may be considered that the "danger zone" during one war will be far removed from that of another, so that an assessment against all tonnage entered will, in the long run, work out equitably. At any rate the cost is not great, say about \$80.00 for a steamer valued at £100,000, and the benefits resulting may be very great. If war should break out between Great Britain and Germany it is safe to assume that many British ships would be captured or seized before they could reach a neutral point where the protection of this association would cease.

During the discussions preceding the formation of this association legal advice was sought as to the liability of an English underwriter for loss covered by the terms of the policy sustained by a foreign assured whose country was at war with Great Britain.

The results of this are set forth in a speech by Sir E. Beauchamp, M. P., chairman of Lloyds, in which he stated in part as follows:

"British underwriters have naturally paid great attention to this matter, and the committee of Lloyd's have obtained from their legal advisers an opinion of which I will read the material parts:

"1. Upon declaration of war between Great Britain and a foreign power all contracts pending between

British subjects and subjects of the foreign power become unenforceable so long as the war lasts.

"2. Consequently a British underwriter is under no enforceable liability to a subject of the foreign power in respect of a loss occurring during the war under a policy effected in time of peace; and, in respect of a loss which had occurred before the declaration of war under such a policy, he can claim to have legal proceedings against him for its recoverey suspended until the restoration of peace.

"3. But a British underwriter is not forbidden by law to pay the subject of the foreign power in time of war for a loss which has occurred either during or before the war, if he thinks fit to do so; nor does he commit any legal offense or render himself liable to any legal penalty by so doing. In the case of a loss sustained by a subject of the foreign power before declaration of war, it rests entirely with the British underwriter to decide for himself whether he will claim suspension of legal proceedings until restoration of peace; and if he does not expressly claim this suspension in answer to an action brought against him, the courts will proceed with the trial of the action during and notwithstanding the war.

"I am advised that the origin of the law as enunciated is to be found in the strict decisions given in the English courts during the Napoleonic wars, and, although these questions have not been directly brought forward in recent years, it is already evident that the tendency of the British courts is against the strict enforcement of the rules laid down at a time when the conditions of international commerce, including marine insurance, were on a very different footing from those existing at the present time.

"As chairman of Lloyd's I desire to make the following statements:

"First, I am advised that the records contain no case in which British underwriters have resisted a claim on a marine policy for a loss by perils of the sea on any of the grounds referred to in the opinion which I have already read.

"Secondly, my attention has been drawn to a recent article in the foreign press in which it is stated that the English underwriters are not only not bound by law to pay compensation to the subjects of an enemy state for losses which arise during the war, even when the policy was concluded before the commencement of war, but that the payment is actually illegal. This statement is an inaccurate reproduction of the answer of the British Maritime Committee to the questionaire, and is misleading. It is contrary to the opinion I have already read, which states unequivocally that 'a British underwriter is not forbidden to pay the subject of a foreign power in time of war for a loss which has occurred either during or before the war,' and, moreover, it entirely disregards the fact indicated in

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the answer to the questionaire that the Crown has an inherent right to permit business with an alien enemy. It has been pointed out in the interesting answer to the questionaire prepared for the Dutch Association by Dr. Loder that 'laws are made in vain if they contravene the ideas of good faith and the sentiment of whatever is honest and of good report.'

"The position which the English underwriters have assumed, and which they have expressed their intention of continuing to hold, is that no contract of marine insurance will be repudiated by them on the ground that it covers enemy goods, but that all such contracts will be faithfully carried out during war as in time of peace; and I may say further, for myself, that the position taken up by English underwriters is, in my opinion, the only one consistent with honesty and good faith."

THE "LORD DERBY"

The recent disaster to this vessel has been published in full in previous issues of the Pacific Marine Review and it now appears that much litigation has grown out of the same.

The steamer was under time charter, one of the terms of which was that in case she was disabled for a period of four weeks the charterers would have the privilege of cancelling the charter after they had removed and trans-shipped any cargo which might be in the steamer at the time.

The steamer had on board about 6,000 tons of cargo, about 5,000 tons of which was discharged after the accident and forwarded to destination. The remaining 1,000 tons were not forwarded.

In order to prevent time charterers from removing this 1,000 tons, the owners sought an injunction against their taking any steps to prevent the loading of the steamer. This injunction was granted, but on appeal by the time charterers the Court of Appeal dismissed the injunction and sustained the appeal.

Since that time the steamer has again been chartered.

Captain Thomas Reiliy was off to Nome on the S. S. "Umatilla" on June 2. A full cargo of California produce was taken on the "Umatilla" for those who wintered in Nome. The departure of this vessel with its well-known and well-liked commander is quite an event in San Francisco and her arrival at Nome is always an occasion for welcoming cheers.

WRECKS, CASUALTIES AND MISCELLANEOUS REPORTS

"Caracao," Str. Struck rock on the west coast of Prince of Wales Island on June 21st and was so badly damaged that she was run ashore. The steamer was valued at about \$140,000, insured locally and abroad.

"Daisy Mitchell," Str. From Grays Harbor June 20th for San Francisco was in collision with the Str. "Missourian" on the night of June 23rd and sustained severe damage about the stern.

"Missourian," Str. (See note about "Daisy Mitchell" above.) The steamer was outward bound for Seattle but returned to this port to ascertain the extent of the damage. She was valued at about \$400,000, insured in the eastern and foreign markets.

It has been agreed by all parties at interest to leave the question of liability for the collision to arbitration rather than take the matter into the Courts.

"Riverside," Str. From Everett for San Pedro with a cargo of lumber struck a rock on Blount's Reef on the morning of June 19th and sank shortl yafter. The steamer was valued at about \$200,000 and was insured for \$180,000 against total loss only; the entire amount being placed abroad.

Rose City." Str. From San Francisco June 4th for Portland encountered a heavy gale, during which part of the foremast broke off and went through the roof of the forward house into the smoking room.

"Yukon." Str. From Alaska for Seattle ran ashore on Sannak Island on June 11th and will probably be a total loss. Steamer valued at about \$120,000, insured locally and abroad.

The "Yukon" has been sold by the master for \$500.00, subject to confirmation of the underwriters, and the sale has been confirmed.

Mr. C. D. Callahan, consulting and designing naval architect, has moved his office to the State Bank Building, San Pedro, Calif.

Mr. Callahan is the California representative of the Gas Engine and Power Company and Chas. J. Seabury Company, Consolidated of New York City, and also the Wm. Gardner Company.

Mr. William Young is associated with him as marine engineer. Mr. Young was in the engineering department of the Seabury Works for a number of years. He has made a special study of the design and construction of advanced types of marine steam engines and machinery in both steam, gasoline and Diesel types.



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MR. JAMES FRENCH VISITS SAN FRANCISCO

Mr. James French, the principal surveyor on the Chief Surveyor Staff of Lloyd's Register of Shipping, with offices at 17 Battery Place, New York City, has been visiting San Francisco. Shipping men who have had the pleasure of meeting this genial and excellent representative of the Chief Surveyor's Staff of this great, dignified and universally known institution sincerely proclaim: "He is one of the best."

Before leaving San Francisco, Mr. French extended a delightful farewell dinner at "The Old Poodle Dog" on Bush Street, on which occasion the following gentlemen were present: Messrs. J. A. McGregor, Jos. J. Tynan, Louis Rosenthal, A. C. Diercix, George M. McGruder, W. C. Owens, Frank H. Evers, Hugo P. Frear, George A. Armes, Stanley Dollar, John A. Bishop, Chauncey St. John, Walter A. Buck, John Rolph, R. L. Hague, J. W. Isherwood and W. H. Stewart.

After leaving San Francisco, Mr. French visited Portland, Tacoma, Seattle, Victoria and Vancouver, B. C., and will return to New York via Port Arthur and Toronto. In connection with this genial surveyor's visit to Seattle, I have been pondering whether the bagpipes and drums were called into action to do honor to the meeting of two of a kind at a certain Capital Hill residence located on Twenty-first Avenue

The Inland Navigation Company, owners of the steamer "Tacoma," intends duplicating this vessel within the very near future. No definite announcement has yet been made in connection with the construction of the new steamer except that the Company is planning the installation of geared turbines.

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As answered by the Hydrographic Office: It is considered preferable for a compass and correctors to remain in a compensating binnacle when the ship is to be laid up for several months. The effect of the compensation is to neutralize the effect of the iron of the ship, so that there should be less effect upon the compass than if the binnacle were not compensated. No effect should be produced on the quadrantal correctors if spherical in form and properly made. Should any effect occur, it can be at once detected by loosening the securing nuts of the quadrantal correctors and rotating each sphere half a turn, at the same time observing whether the compass is affected.

CAPTAIN BENNETT TO SUPERINTEND AMERICAN. HAWAIIAN STEAMSHIP COMPANY

Captain Bennett, who has commanded the S. S. "Honolulan" of the American-Hawaiian Steamship Company for some time past, recently left for New York, where he will be appointed superintendent of this largest American steamship company plying in the coastwise trade. Captain J. S. Green, former commander of the S. S. "Virginian," succeeds Captain Bennett as master of the S. S. "Honolulan."

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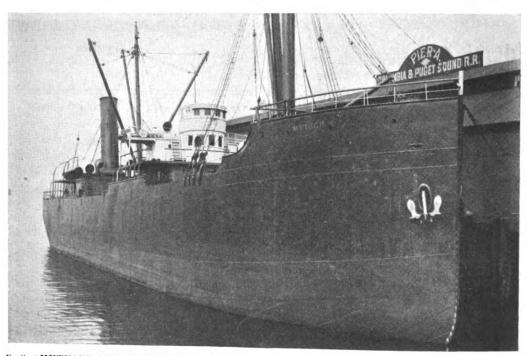
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The steamer "Meteor," owned by the Pacific Coast Steamship Company, has recently undergone some very important repairs in Seattle. The Olson-Klopf Welding & Cutting Company, Inc., were awarded a contract for repairing the two boilers of this vessel with the Henderson-Willis Oxy-Acetylene process, and the work performed by this company was very satisfactory indeed to both owners and the United States Inspection Service.

This is considered one of the largest repairs ever undertaken on boilers by the oxy-actetylene process. The Olson-Klopf Welding & Cutting Company, Inc., have also lately repaired the boilers of the steamer "Alameda" of the Alaska Steamship Company. These repairs consisted of a 26-foot caulking edge in the furnace. The boilers of the S. S. "Mariposa" under-

went similar repairs when six feet of caulking was completed by the same firm in the port boiler, center furnace. A clutch at Mine 11, Black Diamond, was welded by this process, and we are informed that this clutch weighed 2,600 pounds, the places where it had been wasted away being filled in with seventy-two pounds of Silicon iron.

The steamer "Cordova" recently had twenty-seven plates caved in. Messrs. Olson and Klopf cut the plates by oxy-acetylene process and completed the work in six hours, where it would have taken four men ten days to do the same work by the old process.

The Olson-Klopf Welding & Cutting Company, Inc., who are Pacific Coast representatives for the Henderson-Willis Company, are located at 84 Bell street, Seattle, and will be pleased to make bids on all repair work where the oxy-acetylene process can be used.

TRIP TO SUMMIT OF MT. TAMALPAIS A WONDER

The trip to the summit of Mt. Tamalpais is all that the company owning "the crookedest railroad in the world" claim it to be, and even more. The writer had the pleasure of making a trip to the summit of the mountain and can only say that the road itself and the scenic beauty it affords is really marvelous.

The San Francisco Examiner has an observatory on the summit of Mt. Tamalpais, and the wonderful view

obtained at this point of the Golden Gate and surrounding waters, even the Farrallon Islands, makes it a very valuable adjunct to the marine department of this paper

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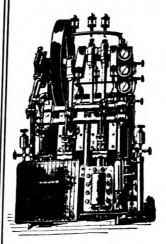
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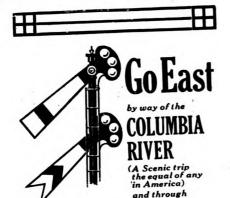
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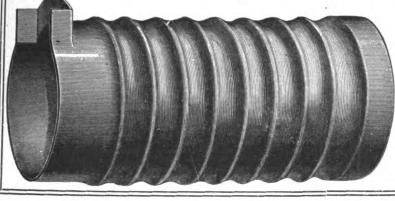
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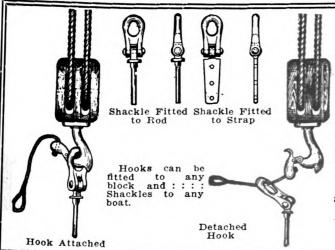
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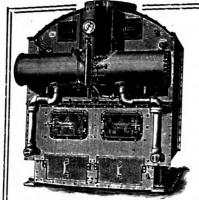
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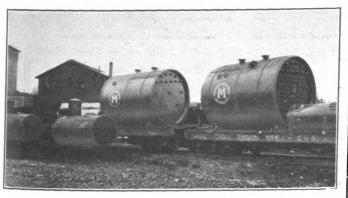
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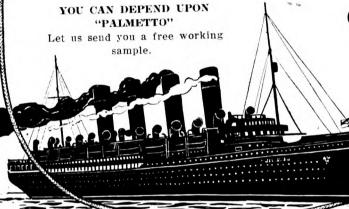
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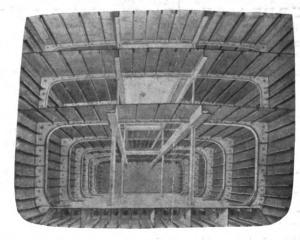
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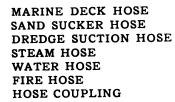
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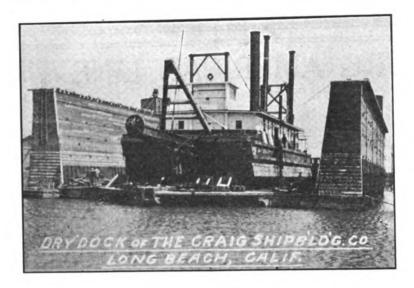
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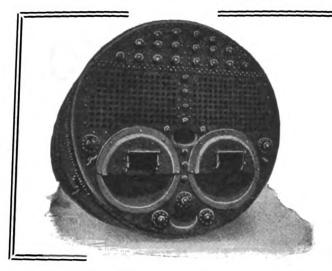
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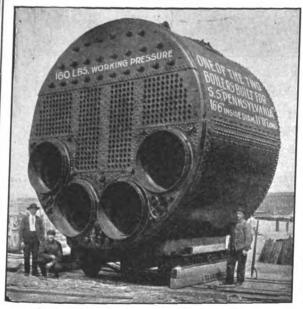
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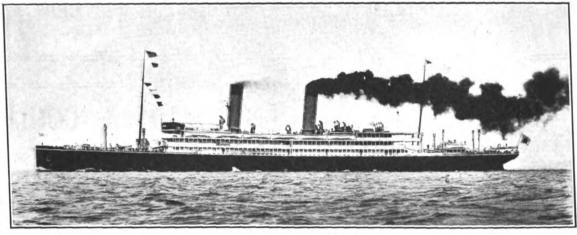
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SAN FRANCISCO, CALIFORNIA, U. S. A.

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WHY NOT A MERCHANT MARINE?

The leading article in our June issue was entitled "Keep the Flag Flying," which heading is the motto of the National Marine League. It is the aim of this publication to vigorously support every measure in favor of American shipping until such time as our prestige on the high seas is again restored, and it is therefore natural that we should strive with might and main to support, assist and adopt the principles of the National League, which has as its object the restoration of the American Merchant Marine in the off-shore trade.

The League's success under its dignified and ambitious leadership is assured and the enthusiasm with which it has been received should lead to its prosperous expansion.

The declaration of principles on which the National Marine League is organized should appeal to all and every American patriot. It is one of the greatest movements that has ever been started since the Declaration of Independence because it is a concerted effort on the part of the voters of this country to make American commerce maritimely free.

The National Marine League is the outgrowth of a condition requiring a remedy at the hands of Congress. Congress does not act because it does not find an aroused public demand. The people are insufficiently aroused because they are unaware of the national dangers and the national losses incident to the present lack of American shipping in the foreign trade.

The purposes of the National Marine League are to present and discuss these matters. The endeavor is to enlist the sympathies, and consequently the votes, of all our people, especially those in the interior states, in the re-establishment of an American merchant marine. It is the intention of the League to present not only the dangers and losses we are threatened with but those we are now actually suffering from, which have become chronic and from which we must be relieved. The League points out what will follow the enactment of really effective and enduring remedial legislation.

Such excellent and noble work needs the help, not only of the thousands of "dollar" members who can vote, but also the help of the thousands of well-to-do sensible and patriotic citizens who can spare many dollars towards this cause. In the first two or three years of this arduous campaign, the expenses will be far greater than the contributions from the "dollar-members." Hence again our appeal for members in all parts of the United States—dollar members, five dollar members, twenty-five dollar members, hundred dollar members, and members who can afford to donate many thousands of dollars, to do their utmost to arouse and keep alive an irrepressible demand for remedial maritime legislation.

Congress must and will then respond!

For three-fourths of a century American ships carried three-fourths of American foreign commerce. For the last half century American ships have carried but one-fifth of American foreign commerce. They now carry less than one-tenth. "As a branch of industry," said Thomas Jefferson, speaking of our Marine in 1793, "it is valuable, but as a resource of defense essential."

As a branch of industry it will provide employment ashore for thousands of skilled American masters, officers and men; it will enable our manufacturers to run their mills continuously and give continuous employment to their laborers and mill hands, because it will increase a hundredfold the amount of our export trade. As a

Generated on 2024-07-25 15:52 GMT Public Domain, Google-digitized branch of commerce it will afford the means of increasing and holding our foreign trade and will internationalize our foreign exchange and banking business.

As a resource of defence it will place at the immediate disposal of our Government an adequate supply of merchant ships and trained and experienced men whenever our Government needs them.

At present American foreign commerce (the annual cost of carrying which is upwards of \$300,000,000) is upbuilding foreign naval reserves of merchant ships and men-our commerce strengthens and enriches our foreign rivals while our own shipping and commerce remains weak.

Our foreign commerce must be used to build up our own shipping and create an urgently needed U. S. naval reserve of merchant ships and merchant seamen.

With the literary acumen that has always distinguished the editorials of the "Transcript" of Boston, Mass., they pounced upon the very kernel of the argument in favor of the League and quoted the same lines from Mr. P. H. W. Ross (author of the "Western Gate" and President of the League), as the "Pacific Marine Review" quoted in its June issue for this purpose. The "Transcript" stated: "Our country is lacking in the entire range of its marine activities and consequently every line of manufacture and of business and every laborer and every mill in this country is suffering because of the undeveloped state of our marine possibilities and of our export trade.'

The "Pacific Marine Review" again appeals to all its readers to join the League and become one of the little band of constructive statesmen of the 20th Century.

We urge all to apply to the National Marine League, Wilkins Building, Washington, D. C.

THE HON. JOSEPHUS DANIELS VISITS THE PACIFIC COAST.

The visit to this Coast last month by the Hon. Josephus Daniels, Secretary of the Navy, was one, the outcome of which should be of lasting benefit, not only to the entire Coast but to the entire country. If the Secretary can carry out all of the promises he has made, both definite and tentative, we shall all have cause to rejoice, and to have a firmer belief in the efficacy of personal inspection.

For instance, Secretary Daniels intimated that San Francisco Bay will have one of the largest and best Naval Stations in the country. He promised that when the Canal is open the entire fleet of the navy will come to this Coast, or, as he put it, "will come home." He realizes the need of a greater Navy and states that battleships will be built here. He promises that Mare Island will not be reduced in rank as a Navy Yard, but on the contrary, will be made larger and more efficient, and he realizes the need of sane legislation regarding our merchant marine, to conserve what little we have in the foreign trade and to greatly increase it.

To those of us who had the pleasure of hearing Secretary Daniels he appeared to be a very forceful man, with strong and sensible ideas and the courage to work for them, but will he be able to carry them to a successful conclusion?

It is true that next to the President he is the Commander of the Navy, but it must not be forgotten that his branch of the Service is of the executive. He can direct and guide movements and carry out laws made by others, but he cannot make laws. His influence for

or against is, of course, very powerful, but back of him is the legislative and great must be the influence to mold that diverse body of men composing Congress.

The need of a greater navy is as apparent to him as it is to all of those who give the matter careful thought, but the action of Congress, at its last session, is not conducive to hope that any material increase will be sanctioned for some time to come. The great objectors to any increase in the naval strength of this country, apparently, are the men from the interior who do not know or do not or will not realize that aside from any actual warfare that might be forced on this country the moral effect of being able to withstand onslaught or defying threat would do more to maintain international peace than anything else that could be done.

If the sentiment of the present Congress is against any material increase in the navy, it is natural to suppose they will consider that without an increased navy it is useless to provide additional stations, for without the navy there will be no need for naval stations, dry docks, or other things which go to make great naval strength.

All the additions and improvements for which Secretary Daniels sees the imperative need and of which he approves appropriations must be asked of Congress, and the present Congress has shown us what its attitude really is. If, as Secretary Daniels states, the Committee on Naval Affairs of both branches of Congress will visit this Coast before the convening of the next session much good may result, for on these committees are many men from interior States and a personal inspection may show them, more than anything else will do, the greatness of the country and its need of absolute protection and increase in instruments of moral suasion.

As Secretary of the Navy, Mr. Daniels, with the consent of the President, may order the entire naval strength to this Coast and keep it here, but it is doubtful if this is either wise or prudent. To congregate the fleet here during the Exposition is eminently fitting, but battleships and cruisers are needed on the Atlantic Coast and at present an even division of the fleet would be all that could be expected. We are not at present threatened with any trouble in the Pacific, but there may come a time when a show of force may be necessary, but with the Panama Canal open our force here could be augmented by ships from the Atlantic. In the meantime if the Secretary can induce Congress to forget or modify its Utopian ideas, much good will have been done and the country may look forward to the time when it will have a sufficient navy to cause other nations to pause before making any bluff.

Secretary Daniels is an energetic man. of his time was naturally given up to social necessities, yet he did not let that interfere with a thorough inspection and investigation. From Puget Sound to San Diego he traveled, acquiring information from first hands and from his own insight. No strategic point escaped him, and whatever the actual outcome may be, the entire Coast will have benefited from his visit.

WE MUST AND WILL HAVE A MERCHANT MARINE.

Although the Senate Committee on Finance has eliminated all effective provisions in the Tariff Bill for preferential duty, it seems hardly possible that the United States Senate can afford to overlook this oppor-



tunity to deal fearlessly and impartially with our existing lamentable maritime affairs.

Their action, however, in the matter of preferential dut is presumably due to the Administration's deplorable surrender to the biddance of foreign powers.

The withdrawal of the Underwood paragraph may have worked to the entire satisfaction of foreign rivals, but the views of our people on American Merchant Marine conditions become more pronounced every day.

Indignation is felt throughout the land at the attitude of our theorists who so blunderingly proclaim that the provision in the Underwood Bill is in contravention to our treaties with foreign nations. This, in fact, is a subject of ridicule and particularly so coming, as it does, from a party that a few years ago insisted we could do things without the consent of any nation on Earth. In making this statement, I wish to assure the reader that the "Pacific Marine Review" is a non-partisan and impartial publication.

Mr. Underwood merely inserted the thin edge of the wedge of discriminatory duties in the Tariff Bill which was favored by the House and which has so much served to arouse the desired national interest, yes, and the international interest of powers who practically now bid the oceans ebb and flow.

Loyal demonstrations and implicit actions by the U. S. Senate was anticipated in order to drive this wedge home vigorously and fully, although it might have separated the United States from its commercial contracts with other powers in the abrogation of existing treaties.

We must have a Merchant Marine and we will have it!

More pressure will be brought to bear for remedial legislation all over the country, including our inland States, and if Congress has as yet not heeded the growing and centralizing effect of animated public sentiment, which will bring about the necessary assurance to restore this country's oversea commerce, it must ere long!

Then the larger portion of our lawmakers will have been freed from the spell of Orpheus and will yield to the nation's demands for the expansion of its industries, the creation of a large and efficient naval reserve, and the necessary American merchant ships to carry fuel for our fleet which should be assisted in time of trouble by ocean greyhounds as scouts or transports.

And last but not least, our foreign commerce, which is not carried by us, is not even underwritten by us and not financed by us.

Is there one living American who does not believe in the imperative essentiality of his country's maritime independence?

Delays and postponements of the essential legislation have for years past been the cause of grave criticism on the part of the voting public, which can but view the matter with disgust, distrust and suspicion, and which is now earnestly clearing the decks for immediate action.

It is not very long ago since we created a law prohibiting railroad-owned ships using the Panama Canal. It is laughable—it is sad—in fact, it is outright silliness, but let me quote from a more capable writer on this subject:

"My answer is that the law is on its face an indictment of popular government; a miserable confession that the boasted rule of the people is a failure, and that the Public doubts its power. I cannot see it any other way, unless it be that the Public believes itself to be too lazy or stupid to protect itself.

"The whole legislation is based on the belief, or alleged belief, that if the railways own ships that perform a regular service through the canal they will keep sea-

borne rates so high, that the Sovereign Citizens of the U. S. A. will have no benefit from the canal in their coastwise transportation charges.

"Think of it—a People powerless to protect themselves!
"Sovereign Citizens who have given their crowns, scepters and rulerships to the railroads!

"In Monarchical Canada and Great Britain and Imperialistic Germany the so-called subjects of the Sovereigns find no difficulty in regulating railway and steamship rates.

"And they tell us that the American Monarchs are so afraid of the corporations that they shut them out of the national canal!

"Gracious goodness, that is not a matter for argument: it is a subject for ridicule."

SAN PEDRO HARBOR RULES DISCLOSE PETTY POLITICS AND INEFFICIENCY.

On July 24, 1911, the Board of Harbor Commissioners of the City of Los Angeles adopted rules and regulations for the Government of Los Angeles Harbor.

Of the numerous paragraphs comprising these rules and regulations, Sections 1 and 4 are reproduced herewith:

"Section 1. For the purpose of applying these rules and regulations, the 'Inner Harbor' shall be deemed to refer to all that portion of Los Angeles Harbor northerly of Deadman's Island, which shall be designated as the Inner Harbor, and the 'Outer Harbor' shall be deemed to refer to all that portion of said Harbor southerly of Deadman's Island, which shall be designated as the Outer Harbor.

"Section 4. It shall be unlawful for any person to run any steam vessel in any portion of the Inner Harbor at a greater rate of speed than four (4) miles per hour, or in the Outer Harbor at any rate of speed greater than fifteen (15) miles per hour.

"It shall be unlawful for any person to run any launch, or other small craft, propelled with naphtha, gasoline, or other motor power, in any portion of the Inner Harbor at a rate of speed greater than ten (10) miles per hour, or in the Outer Harbor at a rate of speed greater than fifteen (15) miles per hour."

It appears that the rule contained in Section 4 has only of late been enforced, unquestionably due to recent municipal elections.

The so-called Port Warden of San Pedro acting in the capacity of Harbor Master, and naturally anxious to keep his position, has lately "gone a-sweeping," using an old broom enriched by a new handle. He omitted, however, prior to the above mentioned election, to apply this new handle to the broom. Hence the now rigid enforcement of the old rule as set forth in Section 4, which has recently caused the arrest of several shipmasters in charge of steamers regularly employed in the coastwise service calling at San Pedro and who have conscientiously violated the somewhat absurd rule in the protection of their charges and consequently themselves.

However, let me state to the credit of the Board that blundering in the shaping of navigation laws, whether municipal or federal, is an old offense in our country, for in the making of marine laws we always prefer to consult the drygoods merchant instead of the professional ship operator and the sailor. The consequence is that a law is made one day and amended the next and our National Capital is no exception in this respect.

While the rule in itself has merit, if a speed limit



of seven instead of four knots is permitted, no conscientious shipmaster would intentionally violate a rule within reason. The present Port Warden lacks in many respects the desirable tact, knowledge and experience necessary to do full justice to his office.

Every sailor knows that the first essential matter in all narrow channels where vessels are moored alongside of wharves is the imperative attention to mooring lines, particularly so in waters which are subject to strong tidal influences. When vessels pass in or outbound the water displacement is more or less of serious concern and naturally more so to moored vessels. Therefore, when larger vessels are moving, carelessness in watching mooring lines breeds mischief and at times causes considerable damage both to the vessels so moored as well as to the wharf itself. It was probably this very inattention to mooring lines that brought forth the too stringent speed limit adopted by the Board.

In due consideration of existing weather conditions and the width of approximately 400 feet of navigable channel, a speed limit of four knots on entering the inner harbor of San Pedro is to say the least absurd and every practical shipping man and experienced sailor will coincide in this opinion.

It is an acknowledged fact that a W. S. W. wind blowing with a force of about 20 miles per hour is prevailing throughout the year in this region. On the one hand the deep loaded freight steamer with small and comparatively low upper structure and also the deckloaded lumber schooner may "perhaps" succeed in navigating the approach to and partly in the inner harbor at a speed limit as at present set forth in these rules, although it is seriously doubted.

On the other hand the light drafted, speedy passenger vessel, with the high upper structure such trade demands, has naturally less grip in the water and a much more exposed surface to the wind blowing from the port beam when inbound and from the starboard beam when outward bound and is thus placed at a most decided disadvantage with a four knot speed.

Such a vessel when slowed down to the speed mentioned above goes sideways like a crab and would undoubtedly land on the beach where the crab suns itself.

Would any sane person or just Court criticize or condemn a master in charge of such a vessel for the compulsory violation of such a rule? Emphatically no! No professional man would and no Judge qualified in Admiralty Law could!

In view of the above stated undeniable facts, it is hoped that a revision of Section 4 will follow in the shortest possible time and that a seven-knot speed limit will be adopted as it should have been in the first place. There is further room for improvement in Section 10 of the harbor rules.

The chart showing the approach to San Pedro Harbor illustrates the condition clearly and should have been more diligently and critically studied in co-operation and consultation with men of the cloth who are familiar with the conditions. The shaping of such a rule, which for two long years was a farce and which in its present enforced rigidness has to be violated to avoid serious accident, would have then been averted.

"OUR FIELD SHOULD BE THE WORLD."

Our highly esteemed contemporary "Fairplay" of London, England, published in its June 19 issue an interesting and deserving article under the heading of "The Imperator," dealing with this the last word in maritime splendor and perfection.

I quote the following from the closing lines of this excellently written theme:

"I close this article on some aspects of a great maritime work by a reference to that wonderful company whose operations-directed from Hamburg-extend to all parts of the world and have now assumed international importance. Above the door of the head office on the Alsterdamm is graven the legend: 'Mein Feld ist die Welt,' and I believe that this is truly the spirit in which the Hamburg-American Line work. of the Line is due to the sheer merit of its management and the splendid attention to minute details, which is, perhaps, the choicest product of German methods. There is no need to enlarge on the monumental labors of Director-General Ballin and those who work with and for him. In the Hamburg-American Line there is but one ruling impulse, and that is the effort to attain success by the sure method of deserving it."

This is indeed a high and unbiased compliment paid by the Editor of England's great shipping weekly to the Hamburg-American Line and England's strongest rival on the high seas, Germany.

However, the motto of this wonderful Company and the spirit in which the management of the Hamburg-American Line lives up to it may well be used as a bitter rebuke to our Nation's laxity in the accomplishment of Merchant Marine achievements. "My field is the World" is the literal translation of the motto quoted by "Fairplay" and to ply with motives "Our Field Should be the World," but—, and I again quote and this time from an article published in the "Navy" of July by P. H. W. Ross:

"Thoughtful Americans who take stock of their National Heritage will discover, if they have not already done so, that America is using only one-half of the 'Talents' that the Almighty has handed to the particular group of ninety million intelligent and industrious human beings known as the American Nation, to make the most of.

"Providence has not entrusted any Marine 'Talents' to the group of people nationalized as the Swiss Republic. Consequently, we can not expect the Republic of Switzerland to concern itself about Marine affairs. But, notwithstanding the fact that we are endowed with a range of Marine possibilities by far the most magnificent of any nation on the face of the earth and a commercially strategic position equaled by none, we make practically no use whatever of those possibilities and conduct our over-seas foreign affairs much as though we were a Switzerland or a Tibet, instead of really being as we vaingloriously proclaim ourselves to be, 'Columbia, the gem of the Ocean.'

"All around our domain, at Boston, New York, New Orleans, San Francisco, Portland, Seattle, and Tacoma. we are spending millions of dollars in making splendid ports and harbors,—for whose use? We are building the Panama Canal; whose foreign-going ships will use it? Every other nation's but our own. (Readers of the "Pacific Marine Review" will unquestionably remember this last expression used in previous articles published in these columns.—Ed. Note.)

"We garnish our halls, beautify our ballrooms, but we do not dance therein ourselves. Yes, we trim up our ocean ballrooms very snugly, but it is our guests who dance, to their great pleasure and profit and at our expense, while we stupidly stand on shore, like ballroom 'wall-flowers,' or, at best, sea anemones.

"The reason? Because our shipping and navigation laws are enacted by the representatives of a population overwhelmingly continental in its outlook on life.



"Any one to blame or to scold at? No one; a perfectly natural state of mind for said population to be in, considering how busy they have been in making the most of their continental 'Talent.'

"The cure? To inspire the minds of the people with the fact that if they want their manufacturing, industrial and financial prosperity to continue, they must sell their goods to outsiders and no longer confine themselves to selling to themselves.

"Such trade methods, in the end, resemble the efforts of a squirrel in a cage, that goes round and round and never gets out. A big department store never makes money by selling goods to itself. What it sells to outsiders is what counts. A few years ago we paid a large part of our debts to outsiders by selling them meats and foodstuffs. Now we cat up nearly all that we grow on our farms ourselves,—all but cotton. So we have got to sell more manufactured goods, not merely agricultural implements, typewriters and steel products, but all sorts of things, especially woolen and cotton goods.

"You may say that the foreign ships that have heretofore carried our exports of meats, foodstuffs, etc., will be just as glad to carry our exports of general manufactures. A great mistake; if you are making and selling woolen and cotton goods yourself and have some spare carrying capacity you don't in the least mind carrying another fellow's wheat and iron, because you are not in that particular line of business.

"But if the 'other fellow' asks you to cut your own throat by helping him to compete with you in your own lines of business, to help you to sell your goods to his customers, you will find that he objects. Do not expect too much of human nature, America. You are now forced, whether you like it or not, to compete sharply with England and Germany in the same lines of business as they pursue. You have heretofore used their ocean delivery wagons. The arrangement has been fairly satisfactory, up to now, but is fast becoming an untenable position.

"You have got to put on a force of ocean delivery wagons of your own, which means that you must pass such laws as will induce American citizens to engage in the over-sea foreign shipping business, which in turn means a rehabilitated American merchant marine.

"And, with a rehabilitated American merchant marine, the hopes and desires of those who have labored and longed for a Naval Reserve and a superb and mobile navy will be realized.

"Now, you will ask, how are we going to arouse maritime sympathies in a continental minded people? "By pocketbook phlebotomy. Every member of the League will be bled to the extent of one dollar. Those who can and who wish to give more are earnestly requested to give more. The funds thus raised will be expended in a campaign of education and information, carried honestly and openly to the people themselves, and the people in turn will imprint their mind and desires upon the minds of their Representatives and Senators in Congress.

"This is the only honorable way of carrying an issue to the people, who after all are the masters of all.

"At no time will the National Marine League become a partisan organization. Never has it 'lobbied,' never will it 'lobby.' Never will it represent any of the so-called 'Interests.' Its strength lies with and comes from the voters. The moment it is false to such a noble trust, that moment it is doomed. No man is too poor to be a member of this League; none too rich. None will be barred because of his 'Interests.' None will be ad-

mitted because of such. This is a League of American citizens who join together for purposes that are sensible, business-like, and patriotic, and not because they happen to be shipping men, railroad men, laborers, manufacturers, bankers, teachers, or anything else, but simply because they are desirous of their country's making the most of itself."

WHAT THE FOREIGN TRADE DEPARTMENT OF THE SAN FRANCISCO CHAMBER OF COM-MERCE HAS ACCOMPLISHED.

That the Foreign Trade Department of the San Francisco Chamber of Commerce has been of great service to this port cannot be doubted, and especially after one realizes just what the accomplishment of the following means to the shipping interests of San Francisco:

The Foreign Trade Department has secured a set of the most complete maps of the world for the use of exporting and importing members, and a map of the world has also been prepared showing all foreign steamship lines plying to and from San Francisco and their ports of call.

A card index list has been compiled by the Department, giving the names of the exporters and importers in San Francisco, and the principal commodities handled and countries with which they trade.

A complete list has also been prepared by countries and commodities, showing the exports and imports of San Francisco.

The tariffs of the principal steamship companies operating from the port of San Francisco to foreign ports, together with sailing schedules, are to be found at the Department's offices.

The confidential trade circulars from the Bureau of Foreign and Domestic Commerce are also kept on file for the information of those merchants who are interested.

The Department has procured and keeps on file trade directories, giving the names of the principal importers and exporters in most of the cities of the world, together with the principal articles imported and exported and the area and population, etc., of such cities.

Kelly's Import Tariffs of the world, together with the various publications of the Department of Commerce, giving the import duties of nearly every country, can also be consulted at the Department's offices.

The Foreign Trade Department certifies certificates of origin for shipments by San Francisco exporters to various foreign countries, and they are to be congratulated on having secured the adoption by the various steamship lines engaged in foreign trade, of a uniform size of bill of lading.

Ninety-five inquiries have been received during the past six months from foreign merchants asking where they can purchase certain articles or regarding opportunities for selling their products on the Pacific Coast.

A successful foreign trade dinner was recently arranged, which was attended by nearly three hundred exporters and importers, who ably discussed the opportunities for increasing San Francisco's foreign trade.

In 1909 there were 1,353 establishments engaged in the shipbuilding industry in the United States as a whole, which gave employment to 40,506 wage earners, to whom \$25,267.686 was paid in wages. The value of products was \$73,360,315, while the cost of materials was \$31,214,358, equal to 42.5 per cent. of the value of products. The value added by manufacture was \$42,-145,957.



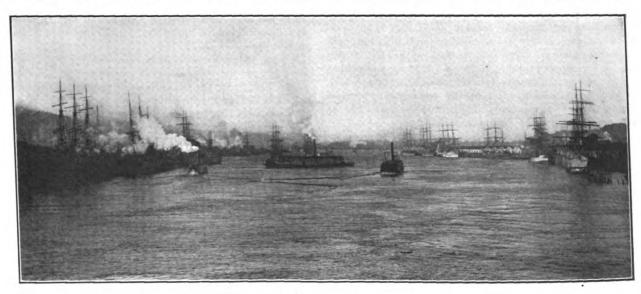
PORTS ON COLUMBIA MAKING REMARKABLE PROGRESS IN PREPARING FOR OPENING OF PANAMA CANAL

I N preparing for Panama Canal traffic and other important expansions of deep-sea commerce, the Port of the Columbia is abreast of other Pacific plans. This term for a port includes Portland, Astoria and also one hundred miles of river intervening. All this great navigable area of inland waters has become practically a unit in preparatory work. Numerous good sites along the hundred miles of the river between Portland and the sea have been occupied by sawmills and industrial plants, and many of them are ready for the rapid expansion of business expected under the new order following the opening of the Canal.

At Portland the heaviest work is under way. Two years ago the city created a department called the Commission of Public Docks, and gave it an initial to be erected as rapidly as storage demand is felt. On the dock floors there may be stored about 9,000 tons of traffic in transit. The four warehouses for this unit will have 166,000 tons capacity.

Plans are maturing rapidly for the second unit in the system, funds for the construction of which are provided. This may be either a duplicate of No. 1 dock, at a nearby site, to accommodate great ocean craft and the river fleet at the same point, or it may be a dock for coast steam schooners and river boats nearer the heart of the business center. Both plans are being urged, and one will be decided upon very shortly, and the fund of \$1,000,000 available for its construction will immediately be used to rush the work.

In the harbor of Portland the Port of Portland Com-



PORTLAND HARBOR-SHOWING GRAIN FLEET

appropriation of \$2,500,000. This Commission has projected a system of docks, warehouses and terminals that will involve the expenditure of \$27,000,000, all of which is to be developed in units in a progressive order as the need for each arises.

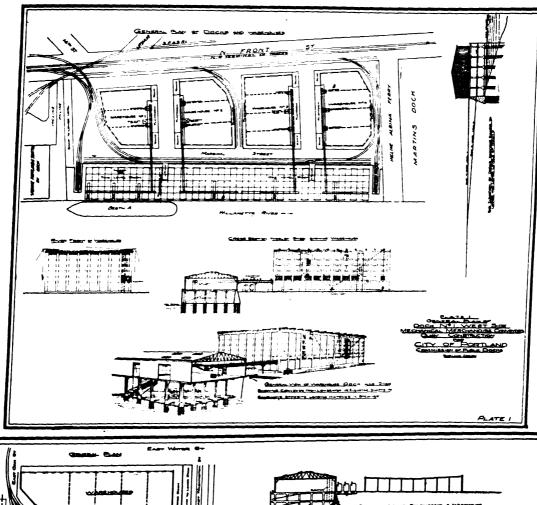
This comprehensive plan adopted by the Commission of Public Docks will give 32,000 linear feet of berthing space, with the docks distributed with reference to distinct industrial and shipping centers, coal bunkers, a terminal system and storage yard capable of accommodating 1,500 cars. A belt line railway around the entire harbor, connecting both sides of the Willamette River and the North Portland district on the Columbia. is one of the units in this system.

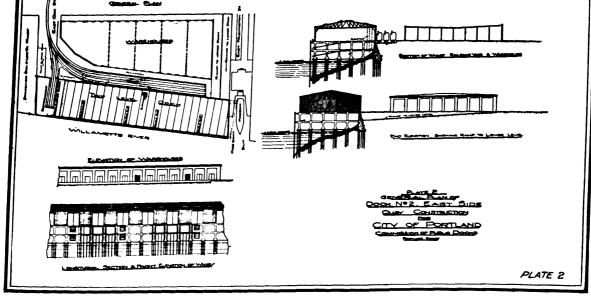
With the first appropriation of \$2,500,000, the Commission of Public Docks has started construction on one wharf, of the quay type, having a frontage of 1015 feet. Three hundred feet of this will be given double decks for river and coast traffic, where distribution from ocean liners to the river fleet, or delivery from the river to the great ocean ships may be made expeditiously and economically. This dock is to be finished early next year, and will be equipped with all the freight handling devices and attachments known to the most modern plants. Behind the dock shed is to be erected at once a 6-story, reinforced concrete warehouse, with 45,000 tons capacity, and space is provided for three other warehouses of the same size and type,

mission has commenced a dredging campaign, in conjunction with the improvement work of the United States government, which will give to the entire Willamette a uniform depth of 30 feet from harbor line to harbor line. In many parts of the harbor proper the depth now exceeds this figure materially, but where this minimum has not been provided by nature, suction dredges will be put on to do the work. In connection with this improvement all the low-lying lands adjoining the harbor lines will be filled up to a bulkhead one hundred feet from the harbor line. As two large dredges will be put on this work, it will be hastened to completion with all the main part of the harbor before Panama Canal traffic reaches the city.

About 90 per cent. of the export trade of Portland is lumber, wheat and flour. Practically all of this in the past has been loaded in cargo lots or in large quantity to each ship, from the wharf of the shipper. Great grain docks, flour mills on the river, and sawmills with river frontage, have chartered ships and loaded them at their own property, obviating for this great volume of business any need for public or commercial docks. In the plans being worked out by the Commission of Public Docks it is recognized that the grain, lumber and flour business is now well taken care of, and that the most urgent demand is provision for handling general cargo.

It is also found that whereas the Portland miller





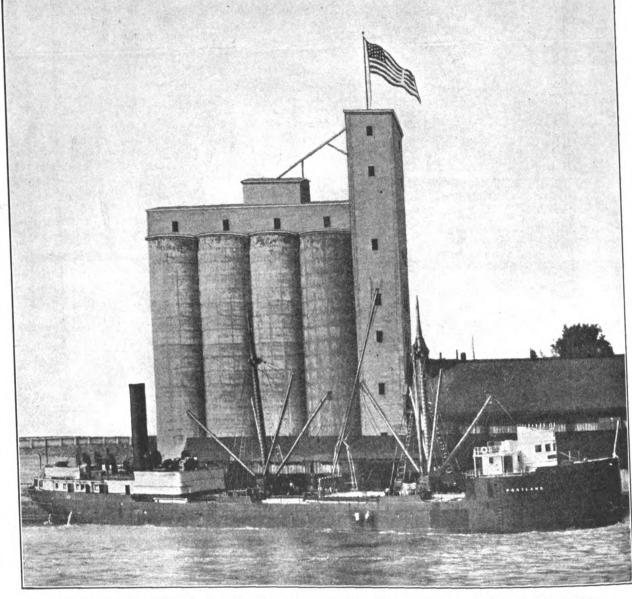
was, in the past, the chief exporter of flour, a large number of smaller mills of the interior now plan to get to tide water with their flour, and these want commercial dock space. They will be provided for by the public docks, where privately-owned docks do not meet their requirements.

As with flour, lumber shipments by water have, in the past, been made almost exclusively from mills on the large navigable streams. Now a demand is arising for dock space for smaller interior mills, which want to send through Portland Western pine and other interior lumber products. A great commercial lumber yard, with perhaps two loading piers, is a part of the Commission plan.

Portland now has over five miles of developed dock property within the central district, owned by private interests. There is 25 miles of river frontage on both

sides of the river, within the area that is to be given a uniform depth of 30 feet in the harbor and channel. Of this, fully 15 miles is easily accessible for use as deep-sea docks, and at no part of this length is there any serious dredging work to be prosecuted. By including the Willamette to the mouth of the Columbia, and that part of the latter stream that would be embraced within a 5-mile radius from the business center of the city, fully 10 to 15 more miles of water frontage is had, which may be converted into deep-sea dock property with a minimum of preparation. There are many more miles where the amount of work involved is somewhat heavier, but not so costly as to make those reaches impracticable in the face of a strong demand. With the enormous area of frontage within the 5-mile radius, and the railway terminal facilities expanding over a great section of it, the problem of





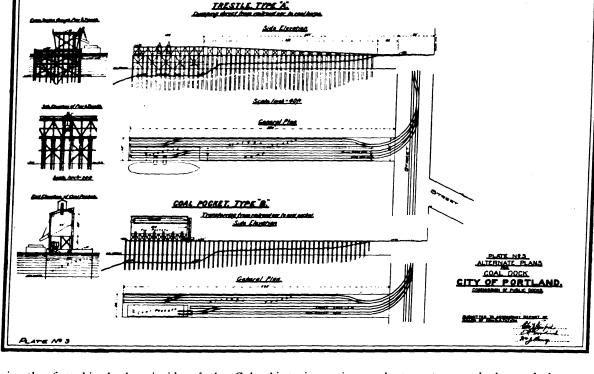
CALIFORNIA AND OREGON GRAIN AND ELEVATOR COMPANY'S NEW ELEVATOR AT PORTLAND

handling immense business in the future is looked upon as no serious one in this port.

From Portland to the sea, a distance of more than 100 miles, the Port of Portland and the United States government have joined forces in making and maintaining a 30-foot channel. An appropriation of \$600,000 has been made by the Federal government for the work this year, out of which two great suction dredges are being constructed. The Port of Portland now has four dredges which are available for the river and harbor work, and expends a considerable sum of money each year on improvement work of this type. All of the river is at present of a depth capable of accommodating with the utmost ease any steamship that can enter over the bar at the mouth of the Columbia and the 30-foot improvement project being put through will make the river accommodate the best vessels of the Pacific.

At the mouth of the Columbia the most important piece of jetty work undertaken on the continent has been in progress for the past fifteen years. The south jetty, seven miles long, and projecting into the face of the Pacific, will be finished within another month, at an aggregate cost since inception of nearly \$10,000,000. A

companion jetty on the north side of the entrance has just been commenced this year by the Federal government, which when finished will compel the great stream to discharge through an opening about two miles wide. Engineers forecast then a scouring force capable of maintaining a 35 to 40 foot channel. To expedite this scouring work while the jetties are being built, a seagoing dredge, The Chinook, is operating this summer on the main channel across the bar. As a result of the building of the South Jetty, there is a constant channel 40 to 60 feet deep for a distance of seven miles over an area that in early years was a zone of shifting, uncontrollable sands. This work has pushed the channel through what was the old bar, until, instead of several miles of uncertain waters, the remnant of the bar between the 30-foot contour lines is but 3,000 to 4,000 feet wide. The North Jetty ultimately, and the dredge in the meantime, is certain to break down this slight barrier between the mighty port of the Columbia and the deep sea. At present the available water on the 3,000foot bar ranges from 25 to 27 feet, according to engineers' measurements, which is not sufficient for vessels of 24-foot draft or more to pass over in all kinds of weather without being compelled to wait at times



Astoria, the first big harbor inside of the Columbia is making aggressive bids for a fair share of new commerce coming to the Pacific. Plans have been made for the Port of Astoria to call an election for \$800,000 bond issues, to erect public docks. Other important improvements are under way. As Astoria is within a few miles of the sea, that port plans to get a considerable amount of the heavier shipping which may be pressed for time, or strives to maintain a fast schedule. A strong bid is to be made for the largest vessels of the Pacific, when the Bar permits their entry. Astoria's mercantile interests are also starting a suit before the Interstate Commerce Commission, demanding the same railway freight rate from the interior of the Columbia basin to that port, as is given Puget Sound. At present Portland gets the same rate as Puget Sound, and Astoria has to pay additional.

St. Helens, on the river between Astoria and Portland, is one of the important intermediate points which

is getting ready to get a good share of the new lumber trade. There a big lumber mill, ship-building plant and creosoting plant, are operating and rapidly expanding the output. These and other near-by interests at St. Helens, having deep-water frontages, are ready.

Rainier is another of the intermediate communities where an important lumber and shingle traffic will be handled. Several mills at this place bid for export trade. Numerous other districts are found along the river where deep-sea craft may load at will, and if the Panama Canal opens any considerable new lumber markets for Northwestern soft woods, these places will blossom into important manufacturing and shipping centers.

(The above comprehensive and ably written article was prepared for the "Pacific Marine Review" by W. D. B. Dodson, Trade Commissioner, Portland Chamber of Commerce, Portland.)

THE PORT OF SAN FRANCISCO

One of our subscribers sent us the following questions with reference to shipping at the Port of San Francisco, the answers to which may prove of interest to others of our readers:

What is the length of the longest ship which has entered the Golden Gate?

The S. S. "Minnesota," sister ship of the "Dakota," was the longest ship that has entered the Golden Gate. Her length is 630 feet, registered tonnage 13,000, cargo capacity 40,000 tons, draft when fairly laden 35 feet.

The approximate draft of the largest vessel that has entered the Golden Gate?

The S. S. "Mongolia," sister ship of the "Manchuria," registered tonnage 8750, went out on one voyage drawing 33 feet 9 inches.

The approximate draft of several of the larger steamers that come here regularly?

"Mongolia" 30 feet, "Manchuria" 30 feet, "Cleveland" 30 feet, "Shinyo Maru" 29 feet, "Chiyo Maru" 29 feet,

"Tenyo Maru" 29 feet, "Korea" 29 feet, "Siberia" 29 feet, "Buffalo" 28 feet, "Persia" 24 feet, U. S. S. "Connecticut" 28 feet, U. S. S. "Louisiana" 28 feet, U. S. S. "Prometheus" 28 feet, U. S. Transports "Sherman" and "Thomas" 28 feet, "Seminole" 28 feet, "China" 25 feet, "Ashtabula" 26 feet, "Georgian" 26 feet, "Pennsylvanian" 26 feet, "Alaskan" 25 feet, "Texan" 25 feet, "Kansan" 25 feet, "Virginian" 25 feet, "Mexican" 25 feet.

The amount of water under keel in channels and fairways that is ordinarily considered sufficient? In other words, what depth of channel should be provided for a vessel drawing 29 feet?

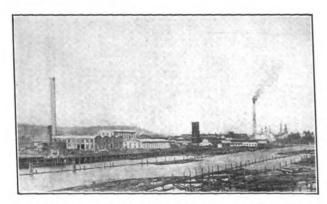
Opinions vary. Inside in smooth water four or five feet under keel is regarded safe. The length of the ship must be considered. Outside in a high sea a margin of ten or twelve feet would not be considered too much for safety and not quite enough if the ship were shorter than ordinary length. A vessel drawing 29 feet should have a channel depth of 35 feet inside and 39 outside.



A UNIQUE METHOD OF LOADING AND STOWING LUMBER IN STEAM SCHOONERS

One of the most important industries of the Pacific Coast in the past has been that of lumber. It has grown to immense proportions and the future promises are bright for the timber interests of this Coast.

Great strides have been made in methods of production in nearly every line of industry during the past few years. Reduced cost of manufacture and distribution has been a study with many and this without reduction in the wage scale. The ever-growing demands of labor have compelled vested interests to look to their plants, systematize their operations and turn out their products at less cost.



1. GENERAL VIEW OF C. A. SMITH LUMBER COMPANY

Until quite recently the transportation of lumber received little attention in this regard. Steam lumber vessels increased in size to a very marked degree. There was economy in the larger quantity of lumber conveyed each trip but the method of loading, stowing and discharging remained practically the same as in the former smaller vessel, the cost of handling being still great.



2. SHOWING DOUBLE ARM TRAVELING GANTRY

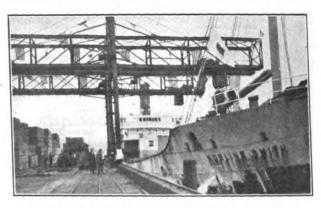
The advent of the C. A. Smith Lumber Company on this Coast seems to have given an impetus to the proposal of reducing costs, not only in transportation but throughout the various mill operations.

Lumber men, ship men and yard men were exceedingly skeptical and gave no encouragement to Mr. Smith's plan of carrying on the lumber business on a unit basis. It appeared to them that there would be no way of weaning mates, stevedores and lumber handlers in general from the old plan to which all had been so long accustomed

It remained therefore for Mr. Smith and his associates to prove that lumber could be cut, milled and delivered at any yard that could be reached by water, in less time,

and in better condition and also more suitably graded than heretofore.

Other concerns on the Coast are now following Mr.



4

3. GANTRY IN POSITION READY FOR LOADING

Smith, as far as consistent within the limits of their plant.

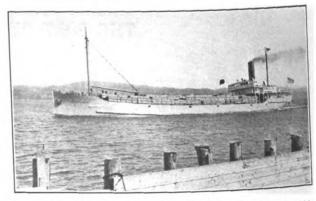
The illustrations will give a clear idea of the system



4. SHOWING DECK OF STEAMER READY FOR SEA

of handling lumber by the Smith method after it has left the sorting shed at the mills.

View 1 is a general view of the mills which occupy



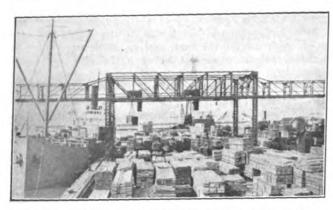
5. "ADELINE SMITH" PROCEEDING DOWN COOS BAY

a large tract of made land. Recently a paper pulp mill has been added which will use up a great deal of lumber which hitherto has been wasted.

View 2 shows a double arm traveling gantry. This crane, also shown in View 6, overhangs the vessel, lifting the lumber units out and landing them in convenient places on the wharf.

All units are 4 feet by 4 feet, varying in length. They are composed of any sizes so long as they square up to the 4 by 4 standard.

View 4 shows the deck of a Smith steamer ready for sea. It has been loaded by the overhead gantry. Fig. 3 shows the gantry in position ready for loading.



6. SHOWING TRAVELING GANTRY IN OPERATION

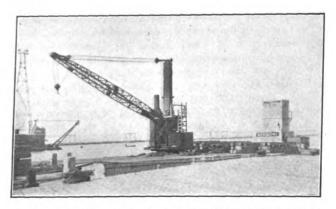
The latest addition to the Smith fleet is the "Adeline Smith" which is shown proceeding down Coos Bay to the bar.

By the Smith system a package of lumber, after being made up at the sorting table in Marshfield, Oregon, is not broken or disturbed but is delivered at yards on the Bay and tributaries of San Francisco in its original unit form.

Fig. 7 shows one of the bay and river barges recently added to the Smith equipment. These crafts are equipped with revolving steam cranes. They come alongside the wharves or steamers of the company, receive or help themselves to their orders and are then towed to the various lumber yards of purchasers and deliver the packages into the yards.

It must be said to the credit of this company that the complete chain of equipment has been designed principally by the company's officers or associates.

The steamer "Adeline Smith" is the fastest sea-going vessel in the trade. She also receives and discharges more lumber in a given time than any steamer. This is permissible owing to the immense hatchways and the dimensions of the holds being multiples of the lumber units.



7. ONE OF THE BAY AND RIVER BARGES RECENTLY ADDED TO THE SMITH'S EQUIPMENT

The hull is built on Hough's central tank system. The engines are 2000 H. P. There are four Babcock & Wilcox marine water tube boilers using oil fuel.

There is a deep ballast system which is used when the vessel is light against heavy seas and which enables her to proceed at good speed without hammering.

PORTS OF THE PACIFIC

By GEN. H. M. CHITTENDEN, M. Am., Soc. C. E.

(Continued.)

Los Angeles.

As already observed, Los Angeles was less favored by Nature as a port than any other important locality on the Coast, and the making of a great port there is the work of its enlightened citizenship. The harbor was an open bay protected only from westerly and northerly winds. It lay wide open to an exposure of 120° toward the south except for the meager influence of Catalina Island, 18 miles in the offing. From this bay, through a long crescent-shaped bar, formerly called Rattlesnake Island, now Terminal Island, there opened inland, by a channel only 3 ft. deep at low tide, what has come to be under development the inner harbor of Los Angeles. It is really the delta of Los Angeles and San Gabriel Rivers (erratic streams characteristic of the water-courses of that section of the country) which bring down heavy loads of silt in their periods of sudden The outer harbor, being exposed to storms from the southwest, required artificial protection, and this has been provided by one of the largest breakwaters in the United States, extending from Point Fermin, previously referred to, easterly, a distance of 11,000 ft., to a low-tide depth of 48 ft. The space thus enclosed, measured back from a line drawn from the end of the breakwater perpendicularly to the shore, is 960 acres, and of this more than 400 acres has a depth of over 30 ft. The anchorage is good, the kelp which formerly was a great annoyance has died out, and the harbor thus formed serves its purpose excellently well. The mean tidal range is 4.1 ft., and the extreme 10 ft.

Great reliance for port facilities, however, is being placed on the inner harbor, which is almost wholly an artificial creation. Its entrance from the outer harbor is completely sheltered by the breakwater. Beginning with 700 ft., it widens to 1,000 ft. at a point 3,000 ft. in, and then rapidly narrows to 500 ft., which width it retains to a point 7,500 ft. in from the outer end. The width then increases somewhat, and the channel terminates at a distance of 12,000 ft. from the entrance in a turning basin 1,600 ft. in diameter. From the turning basin channels lead off to the main interior docks known as the East and West Basins, respectively, which, with their future ramifications, will become the center of Los Angeles Harbor. The situation can be better grasped by reference to Plate X., which was published in the May issue of the Pacific Marine Review. The present width and depth are 400 ft. and 20 ft. to "the foot of the wharves"; thence 25.5 ft. to the turning basin. The existing Government project contemplates a depth of 30 ft. up to and including the turning basin, and two channels, 200 ft. wide and 20 ft. deep, from the turning basin to the East and West Basins.

As already stated, the harbor is almost wholly of artificial creation, and it is costing vast sums, entirely apart from docks and wharves, to arrive at a point which Nature unaided has given to most of the other ports on the Coast. Los Angeles, though liberally aided by the Federal Government, is helping herself effectively. It is a fine example of a virile civic spirit refusing to be balked by Nature in the matter of access to the sea.

It will eventually rank with such ports as Hamburg and Glasgow in the extent to which Man by his energy and persistence has overcome the deficiencies of Nature.

The total development of berthing space is about 19,000 ft., most of which is directly controlled by the railroads. The wharves are principally of timber construction, but in recent years there has been a tendency to extend the use of concrete and steel, and the recent controversy between the Board of Public Works and the Board of Harbor Commissioners turned largely on the choice between concrete and creosote piling for the substructures. There is no seawall construction, unless the great breakwater be classed as such.

The local funds for port development, so far, have come entirely from bond issues, but ground rent will doubtless become a source of revenue in the near future, together with the revenues from docks which the port authorities are planning to build. The City of Los Angeles voted \$3,000,000 in bonds, and it gave a pledge to the Cities of Wilmington and San Pedro prior to annexation that it would expend not less than \$10,000,000 in port development. The expenditure by the United States on the outer and inner harbors, including outside authorizations, is:

Outer harbor	\$3,078,000
	\$2,308,000

Total\$5,386,000

A great saving fact in the enormous labor of building the Harbor of Los Angeles is its close relation to the industrial development of the city. The lands into which the waterways are being dredged are admirably adapted for factory locations, and the material of excavation is being used in making the necessary fills. The whole development goes hand in hand in a way to

produce the best results.

The trade of Los Angeles is active and is steadily increasing. The principal articles of commerce are oil, cement, and lumber products. The estimated shorttonnage and valuation for the calendar year 1910 totalled 1,709,000 tons valued at \$47,000,000.

As yet no public terminal or belt-railway system has been constructed in Los Angeles, but the city is taking steps to acquire one which will serve the port and connect it with the city.

San Diego.

Nature has provided for San Diego, in the first instance, what Los Angeles with the expenditure of many millions can scarcely expect ever to equal. In general exterior outline the two ports are quite similar. Coronado Beach corresponds to Terminal (old Rattlesnake) Island, Point Loma to Point Fermin, while the entrances to the inner harbors are similarly situated in both cases. The difference is that at San Diego the entrance had a very good depth and ample shelter to begin with, while the inner harbor was already dredged. At Los Angeles there was a depth of 3 ft, at the entrance and no harbor to speak of. If San Diego had been as favorably located with respect to its hinterland as Los Angeles, the natural advantages of her harbor would have been decisive, always provided a virile and wide-awake people were charged with its development.

The area of San Diego Bay inside the entrance is 24 sq. miles, of which 1,600 acres is more than 30 ft. deep; and the length of shore line is 38 miles. The original depth of 21 ft. in the entrance has been increased by the Government to 30 ft., and the present

project contemplates an enlarged channel of this depth 600 ft. wide. The present berthing space amounts to 4,500 lin. ft., with a low-water depth of 22 ft. All the piers are private property, but they are subject to sequestration by the City at any time on payment of actual value. There is no dry dock and no public terminal railway. There is a marine railway for vessels up to 1,000 tons burden. The Government maintains a torpedo and submarine-boat station in the harbor, together with quarantine and coaling stations. There is an important ferry service between the city and Coronado Beach.

The present sources of revenue to the port are bond sales, of which only one (for \$1,000,000, voted November, 1911) has ever been authorized. The total Government appropriation for the improvement of the harbor is \$810,000.

The commercial business of the port embracing the calendar year, 1910, totalled 400,000 tons, valued at \$22,-500,000. (To Be Continued.)

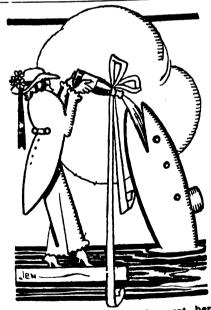
THE YEAR'S SHIPBUILDING.

During the year ended June 30, 1913, there were built and officially numbered by the Bureau of Navigation, 1,648 vessels of 382,304 gross tons, compared with 1,720 of 243,792 for the same period of 1911, showing a gain of 138,512 tons and the largest construction since 1908.

Of the 121 metal steam vessels 36 of 68,203 tons were built on the Great Lakes.

The largest steam vessels numbered during the month of June 1913 are:

of June, 1913, ai	re:		
•	Gross	Where Built	Name of Owner
'Congress'	7,985	Camden, N. J.	Pacific Coast S. S.
"Richmond"	6,563	a armony	Standard Oil Co. of
"Edgar H. Vance" "Comet"	2,521 2,486	Long Beach, Cal. Lorain, Ohio	Hammond Lbr. Co. Standard Oil Co. of N. Y.



When the new submarine got her name

They poured on her bow good champagne

Then they called her H-3
As she had her first spree:
Now listen for protests from Maine!

-Seattle Times.

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DUTHIE

Steel vessels and their auxiliaries designed, built and repaired : . : Telephone Main 1782 2917 WHATCOM AVENUE (East Waterway) SEATTLE

SHIPBUILDERS AND **ENGINEERS**

NAVY DEPARTMENT, BUREAU OF CONSTRUC-SIX NEW TORPEDO BOAT DESTROYERS FOR THE U. S. NAVY DEPARTMENT. TION AND REPAIR.

The final step in the completion of the design of the Torpedo Boat Destroyers provided for in the Naval Appropriation Bill approved March 4th, 1913, was accomplished when Mr. Daniels, the Secretary of the Navy, signed the plans of these vessels as prepared under the supervision of the Chief Constructor. The Secretary has also signed and issued a circular inviting all shipbuilders, who have sufficient plant to construct these vessels, to submit competitive bids for their construction, in accordance with the plans and specifications approved.

The final design of these vessels was developed by the Bureaus of Construction and Repair and Steam Engineering to produce certain important military characteristics desired by the General Board of the Navy.

These vessels will be the largest of any of their class yet designed. They will have the same high sustained sea speed that has proved so successful in previous boats of the same class in the U.S. Navy. They will mark a decided advance in radius of action at a high speed over previous designs and will have largely increased offensive power. A number of changes in types and location of fittings have been made to still further increase the sea-going qualities of these vessels whose prototypes so successfully proved themselves in the heavy storms on the Atlantic Coast during the past two winters. Increased space and weight has been assigned for the living accommodations of both crew and officers in order to provide all possible facilities and comforts for the personnel so that they can remain in the highest state of physical efficiency during long cruises or when performing exacting and hazardous duty with the battle fleet.

These vessels are now designated as Destroyers Nos. 57, 58, 59, 60, 61 and 62. The Secretary will, however, at an early date select the names of six deceased officers of the Navy whose distinguished services or heroic acts have entitled them to places on the Navy's roster of honor-the torpedo boats and destroyers in the active service of their country.

The main characteristics of these vessels will be:

Battery:

Four 4-inch rapid fire guns.

Four twin torpedo tubes.

Machinery:

Steam turbines.

Oil fuel-burning water tube boilers.

The plans, specifications and advertisements for these vessels were issued on June 1st, and bids will be opened in the presence of the Secretary or his representative on or about August 4, 1913.

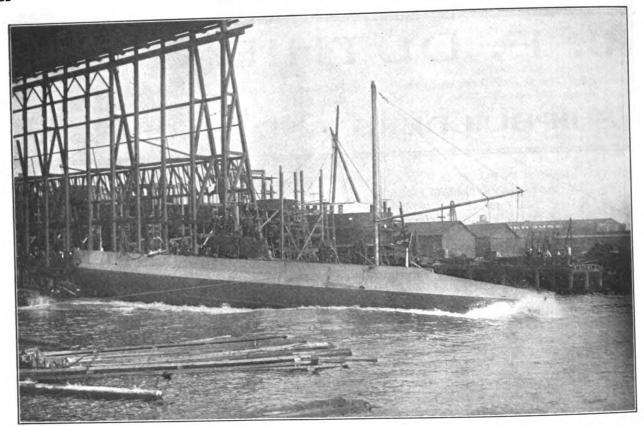
July 9, 1913. Vessels Under Construction, United States Navy.

	of con	cent. npletion, 1,1913.
Name, type and No. of Vessel. Contractor.	I	Per cent. on ship.
Battleships.		
34 New YorkNew York Navy Yard	. 83.3	82.0
35 Texas Newbort News S. B. Co	90.6	89.4
36 NevadaFore River S. B. Co	37.1	17.2
36 Nevada Fore River S. B. Co	33,0	22.7
38 Pennsylvania Newport News S. B. C	1.4	0.5
Destroyers.		
	914	94.4
43 CassinBath Iron Works	88.7	88.6
45 Downes New York S. B. Co	59.2	56.9
46 DuncanFore River S. B. Co	89.7	89.2
47 Aylwin Wm. Cramp & Sons	94.3	93.8
47 Aylwin Wm. Cramp & Sons	93.0	92.1
49 Bennam wm. Cramp & Sons	91.4	90.8
50 BalchWm, Cramp & Sons	90.6	89.9
		1.2
52 NicholsonWm. Cramp & Sons	6.1	1.2
53 WinslowWm. Cramp & Sons	5.7	1.2
54 McDougalBath Iron Works	10.0	3.2
52 Nicholson Wm. Cramp & Sons. 53 Winslow Wm. Cramp & Sons. 54 McDougal Bath Iron Works. 55 Cushing Fore River S. B. Co. 56 Ericsson New York S. B. Co.	7.0	$\frac{5.3}{2.8}$
	1.5	2.8
Submarines.		
26 G-4American Laurenti Co. (Phil.)	92.0	91.1
27 G-2Lake T. B. Co. (Bridgeport) 28 H-1Electric Boat Co. (San Fran.)	88.1	88.1
	94.5	94.5
29 H-2Electric Boat Co. (San Fran.) 30 H-3Electric Boat Co. (Seattle)	93.0	93.0 89.5
30 H-3 Electric Boat Co. (Seattle) 31 G-3 Lake T. B. Co. (Bridgeport)	68 8	68.1
32 K-1 Electric Boat Co. (Oulney)	80.7	78.7
33 K-2Electric Boat Co. (Quincy)	80.5	78.3
34 K-3 Electric Boat Co. (San Fran.)	80.2	78.8
35 K-4 Electric Boat Co. (Seattle)	77.9	74.8
36 K-5 Electric Boat Co. (Quincy)	66.8	63.4
37 K-6 Electric Boat Co. (Quincy)	63.9	58.7
38 K-7 Electric Boat Co. (San Fran.)	58.0	66.2
39 K-8Electric Boat Co. (San Fran.) 40 L-1Electric Boat Co. (Quincy)	67.0	65.2
41 L-2 Electric Boat Co. (Quincy)	.W. O	00.0 00.0
42 L-3 Electric Boat Co. (Quincy) (10.0	00.0
43 L-4 Electric Boat Co. (Quincy)	0.0	00.0
44 L-5Lake T. B. Co. (Bridgeport)	0.0	00.0
30 H-3		
Cal.) Cal.) Lake T. B. Co. (Long Beach,	0.0	00.0
46 L-7Lake T. B. Co. (Long Beach,		
Cal./ (10.0	00.0
	0.0	00.0
Submarine Tenders.		
1 Fulton New London S. & E. B. Co.		
(Quincy) 1	3.4	5.5
Fuel Ships.		
9 Proteus Newport News S. B. Co. 9 10 Nereus Newport News S. B. Co. 9 12 Jason Maryland Steel Co. *	9.7 - 1	99.7
10 Nereus Newport News S. B. Co 9	2.5 - 9	42.5
12 JasonMaryland Steel Co	Comple	eted.
5 Jupiter Mare Island Navy Yard 10	1.0 10	10.0
3 Jupiter Mare Island Navy Yard 100 13 Kanawha Mare Island Navy Yard 14 Maumee Mare Island Navy Yard 00	1.U 1.0 4	1.0
	<i>).</i> 0 (00.0
Gun Boats.		
19 Sacramento Wm. Cramp & Sons 23	.4 1	9.7
20 Monocacy Mare Island Navy Yard 5	4.7 4	1.7
16 Palos Mare Island Navy Yard 52	4	1.7
 Delivered at Norfolk, Va., June 26, 1913. 		

During the twenty years 1892-1911 some 95,000 voyages were made between Great Britain and America, about 350,000 crew and over 9,390,000 passengers were carried, out of which only 1,057 crew and 80 passengers were lost. The loss of passengers was thus one out of every 117,400.

The SS. "Imperator" of the Hamburg-American Line is reported to have cost over \$8,000,000 to build.





The above photo shows the launch of the Chilean submarine at the yards of her builders, the Seattle Construction & Drydock Company. This vessel which is now nearing completion was built under the supervision of the Electric Boat Company, of which Mr. T. S. Bailey is Pacific Coast manager and Mr. G. H. Eggleton constructing engineer.

The "Iquique" as well as the "Antofagasta," her sister ship, which is also under construction at the Seattle yards, will be delivered on their completion to the Chilean Government at Valparaiso, to which port they

will be towed from Seattle.

CONTRACT FOR OIL-BURNING TUGS AWARDED.

The Navy Department, Bureau of Construction and Repair, has entered into a contract with the Seattle Construction & Dry Dock Company for the construction of three oil-burning tugs. The dimensions of these vessels are as follows:

Length over all
Length B. P115'-0"
Breadth (molded) 24'-0"
Depth 15'-0"

The machinery will consist of vertical three-cylinder triple-expansion engines of about 800 horsepower, single

The construction will be to the highest class under the rules and regulations of the American Bureau of Shipping.

STEEL TUG "MILWAUKEE" LAUNCHED AT SEATTLE.

The steel tug "Milwaukee," built for the Chicago. Milwaukee and Puget Sound Railway Company by the Seattle Construction and Drydock Company, was launched on July 23d.

The "Milwaukee" is intended for towing freight barges to Seattle from the terminals of the Bellingham Bay and British Columbia Railway Company, which is a branch of the C. M. & St. P. road at Bellingham. The tug is of steel construction throughout, 117.6 feet long and 22.6 feet wide. Her equipment includes every modern

device for towing. She will be propelled by oil-burning triple-expansion engines of 1,000 horse-power, and when completed will cost approximately \$100,000.

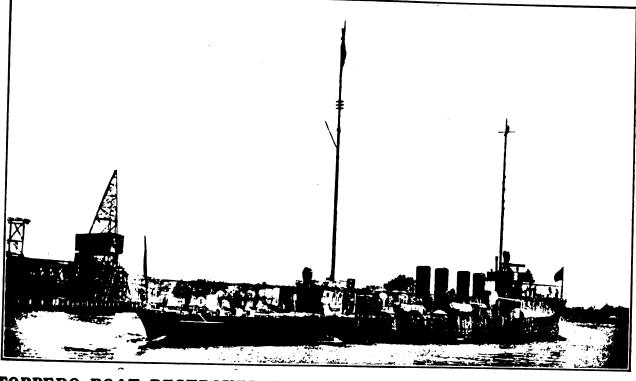
BELLINGHAM HARBOR TO HAVE TESTING STATION FOR SUBMARINES.

A. H. Bailey, Pacific Coast manager for the Electric Boat Company, designers of the submarines now building at the principal ship yards on this Coast, has recently been in Bellingham, Wash., inspecting the work of preparing the submarine testing station on the east side of Point Francis.

This stretch of water offers a perfectly smooth bottom, with good depth and no dangerous obstructions. The site was first selected six months ago, the facilities there for receiving storage current and gasoline being excellent.

It is expected that the first submarine will arrive at South Bellingham toward the latter part of July, and according to Mr. Bailey, there will be enough new submarines coming to Bellingham for trial to keep the testing station busy during this summer. The Stone & Webster corporation will supply the storage electricity for the vessels. Under water they are operated solely by electrical current from storage batteries, obviating fumes from gasoline driven engines which are used upon the surface.

Mr. Bernard N. Baker is at present in Europe, where he will remain until about the first of October.



TORPEDO BOAT DESTROYER "DUNCAN" WITH SPEED OF 29 KNOTS

The "Duncan," which was built by the Fore River Shipbuilding Corporation of Quincy, Mass., ran her standardization trials at Rockland, Maine, on July 5.

The "Duncan" is 305 feet 3 inches over-all, 30 feet 6 inches beam, fitted with Curtis marine turbines, developing 16,000 h. p. on twin screws, giving the vessel a speed of 29 knots. For economy under cruising conditions a compound reciprocating engine is connected by means of a movable clutch to the forward end of the turbine shaft. The steam after passing through the engine enters the turbine, which acts as a low pressure unit under this condition. The contractor's preliminary runs indicate that the vessel will be very economical. It is expected that she will be complete and ready to

deliver to the Navy Yard, Boston, Mass., early in August.

The Argentine battleship "Rivadavia" will leave the works of the Fore River Shipbuilding Corporation, Quincy, Mass., on August 3, 1913, and will proceed to New York, where arrangements have been made to dock the vessel in No. 4 dry dock at the Brooklyn Navy Yard, where necessary under-water overhaul and painting will be completed. The official trials of the vessel will commence at Rockland, Maine, about August 11, 1913. The United States Navy Department at the request of the Argentine Naval Commission and the contractors have consented to conduct the standardization and economy runs of this vessel, which work will be done by the Board of Inspection and Survey, Navy Department.

SAN FRANCISCO BAY FERRIES

About thirteen years ago the first screw propeller ferry steamer, the "Berkeley," was built at the Union Iron Works and put into service by the Southern Pacific Company between San Francisco and Oakland. This vessel has a steel hull, triple expansion engines, Scotch marine boilers, and was planned to develop about 1500 I. H. P. The shallow water for a distance of three-fourths of a mile on the Oakland side, limited the draught to 8 feet and necessitated a flat bottom with full section lines. The light draught limited the diameter of the propeller, so that its efficiency was greatly reduced; it is not possible to increase the revolutions sufficiently to develop the requisite power without setting up undesirable vibrations. It is therefore not surprising that this vessel did not respond readily in handling.

Prior to the experiment of the Berkeley all of the ferry boats were of the side-wheel type and this is still in favor with the Southern Pacific Company as they now have two new boats of the paddle-wheel type in process of construction at their shipyard on the Oakland estuary, the "Alameda" and "Santa Clara." These vessels were

designed and are being constructed under the supervision of Mr. Wm. McKenzie, marine superintendent for the Southern Pacific Company. The hulls were framed by the New York Shipbuilding Company. The engines are of the inclined tandem double-compound type; one pair of engines on each wheel, the wheels being independent, so that in handling it is possible to back one and go ahead on the other. The wheels are of the ordinary radial type. Babcock & Wilcox watertube boilers have been installed for 2800 I. H. P. in the "Alameda" and the "Santa Clara" is intended to be a duplicate. These boats will have a speed of 16 miles.

In 1902 the Key Route system of ferries was inaugurated with two screw propeller boats for exclusively passenger service. These boats were designed by H. Gielow of New York City, a celebrity in this line of construction. The "San Jose" and "Yerba Buena" were the names bestowed upon the two pioneer craft of this new line. The fittings and general arrangement of the boats pleased the public, as the freedom from the consequent annoyance necessarily attending the trans-



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portation of horses, wagons, autos, etc., could not fail to please and impress. The greater depth of water in the path of the boats from the Key Route mole enabled the designer to give a 13-foot draught and more graceful and desirable lines for speed and sea-going qualities. Triple expansion engines were adopted with Babcock & Wilcox marine water tube boilers to supply steam for 1300 I. H. P. Two years later the "San Francisco" was added to this line with double-compound engines of 2000 I. H. P. steam supplied by Babcock & This vessel has somewhat greater Wilcox boilers. passenger accommodations and the increased I. H. P. gives greater speed. The two later vessels built by the Union Iron Works for the Key Route service, "The Fernwood" and "Claremont" are of the same dimensions and type as the "San Francisco." The possession of five steamers has enabled this company to meet the requirements of the vastly increased travel due to the rapid increase of population on the eastern side of the bay.

The hulls of all of the Key Route boats are of wood. It is unlikely, however, that any future construction of this company will be of wood, steel vessels being preferred, not only on account of the vastly reduced fire risk but for their greater structural strength and the rigidity essential to successful operation of high-speed, high-powered machines. The increased cost of the steel structure is considered to be fully warranted by these

The Atchison, Topeka & Santa Fe Co. have two well equipped steel-hull ferry steamers plying between San Francisco and their Richmond terminal, the "San Pablo" built by the Union Iron Work's in 1900, and the "San Pedro" built by this same firm in 1911. Both vessels are of the side-wheel type. The feathering wheels making 40 revolutions per minute give a mean speed of 14 knots, about 16 land miles. As the buckets enter and leave the water, vertically, the loss from oblique action is eliminated as also the cause of vibration incident to the use of the radial wheel. The "San Pedro" four Babcock & Wilcox water-tube boilers of such capacity that the speed can be maintained with one boiler cut out for any such purposes as cleaning or re-This feature avoids any necessity for laying off the boat for such work, as is necessary under the usual conditions with other boats. This company has two high-powered towboats, the "A. H. Payson" and the "E. P. Ripley" equipped with Babcock & Wilcox marine water-tube boilers. The former has been engaged in continuous service towing barges, carrying freight cars between San Francisco and Richmond since 1902 and the latter since 1907

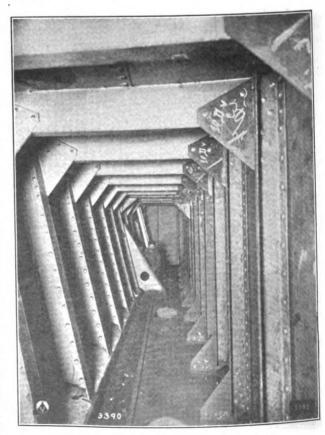
The Western Pacific Railroad Company have launched very recently (July 19), a fine steel-hull ferryboat at the shipyard of Moore & Scott on Oakland estuary. This boat will be practically fireproof and nonsinkable. In addition to the usual water-tight bulkheads provided, a new feature has been introduced by her designer, Mr. John Hopps, by arrangement of fore and aft bulkheads along side of engine and boiler space so that there is an air-tight chamber enclosed by the outer skin and a fore and aft bulkhead parallel to this, at a distance of several feet. This compartment is bounded at the bottom by the skin of the ship and by the main deck overhead. In event of collision and the outer shell being pierced, the inner fore and aft bulkhead would prevent any serious result as the air chamber is subdivided with athwartship plates. This ferry steamer has been named "Edward T. Jeffrey" in honor of the late president of the Western Pacific Company. The vessel has vertical

double compound condensing engines and four Babcock & Wilcox marine water-tube boilers with all 4" tubes-10' in length. The engines will develop 2500 I. H. P. and the estimated speed will be 14 knots. The greater depth of water at the Western Pacific Oakland mole permits a greater draught and consequent larger diameter of propeller than on the Southern Pacific ferryboats, as formerly explained. The growing favor shown the water-tube boiler in the ferry service is illustrated by the fact that the Pennsylvania Railroad has placed eleven separate orders for boilers for ferry boats with the Babcock & Wilcox Company.

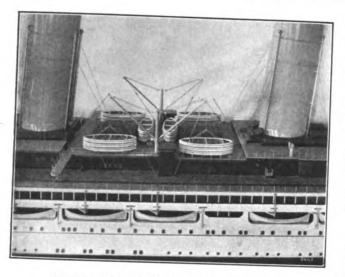
THE WORLD'S LARGEST SHIP.

Supplementing the information published in our last issue regarding the gigantic Hamburg-American liner "Imperator," which is now in service in the transatlantic trade, the two illustrations appearing herewith show the method of launching the life-boats and also the inner skin of the vessel.

The "Imperator" has been constructed with sixteen steel bulkheads, forming in all thirty-six watertight The great liner is not only the largest compartments. ship in the world, but establishes new standards by the completeness of her mechanical equipment, her safety devices, and the variety and luxury of her cabins. The "Imperator" is built with an inner skin, with both longitudinal and transverse bulkheads, and other original features. The bulkheads have been carried to the level of the second deck, high above the water-line. A single bulkhead weighs 1200 cwt. These steel compartments have been completely flooded with water to test their efficiency under extreme conditions. The bulkheads are fitted with Dorrscher doors and closing appliances operated hydraulically from the Commander's bridge, while a second appliance operated from the upper deck is held in



INNER SKIN OF S. S. "IMPERATOR"



METHOD OF LAUNCHING LIFE-BOATS— S. S. "IMPERATOR"

The "Imperator" carries eighty-three large life-boats of the most approved type, accommodating everyone on board. Two of these are high-powered motor boats, capable of towing the others. The motor boats are equipped with wireless telegraph working over 200 miles. Many of these boats are carried on the upper deck between the funnels, and may be lowered by special cranes to either side of the boat. The apparatus employed for handling all these boats is of the newest type, making it possible to lower a boat from an upper deck in a few seconds. The safety equipment also includes life belts for everybody and illuminated life buoys. The efficiency of all apparatus is assured by frequent drills and rigid discipline.

The Shipowners' Association of the Pacific Coast have elected as their President, Oliver Olson, of the firm of Olson & Mahoney, with headquarters in San Francisco, and one of the most prominent owners of steam schooners on this Coast.

THE NEW LAKE WASHINGTON FERRY

A new side-wheel ferry for the Port of Seattle Commission is now building by Messrs. J. F. Duthie & Co. of Seattle. The ferry is to be operated on Lake Washington.

Construction on the hull is well advanced and the builders expect to have the vessel in operation some time in October. After the hull has been erected and partially riveted in Seattle, material will be knocked-down and re-erected on the Lake.

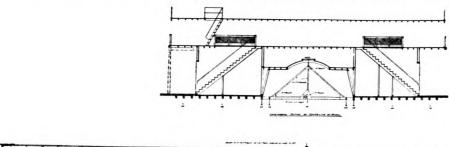
The ferry has a length of 169' on deck and 152' over stern posts; a molded breadth on hull of 33' and over guards 52' 4"; molded depth of 8' 3".

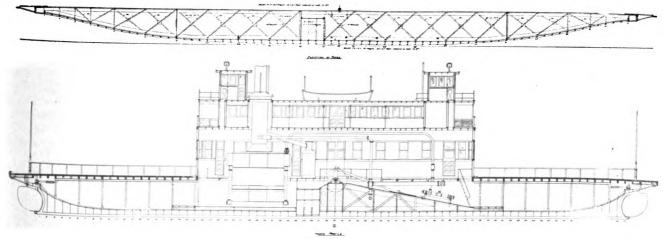
General construction and design are shown in illustrations appearing herewith. It will be noted that the hull is sub-divided by three water-tight bulkheads and four water-tight compartments, and in addition, by a partial oil-tight bulkhead, forming athwartship bunker. Longitudinally the hull is strongly tied together by keelsons and stringers and by a pair of trusses extending from end to end.

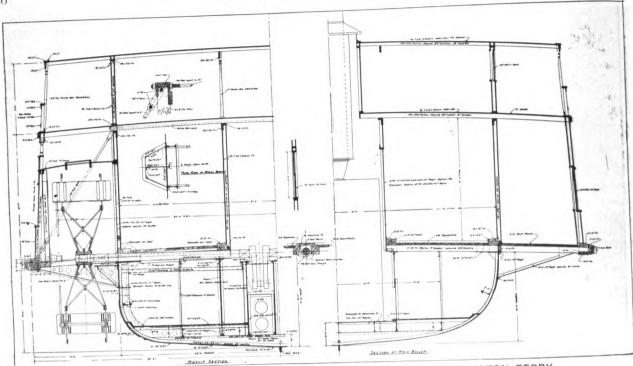
Engine and boiler seatings are designed to give ample rigidity and distribution of strain over a long section of bottom. Wheel and guard beams are of steel construction.

Main deck beams and superstructure will be of wood. The ferry will be double ended, with rudders at each end and two pilot houses. Considerable deck room is provided for vehicles, of which forty or more can be accommodated at one time. The main cabin deck will be fitted with stationary settees, capable of accommodating 300 passengers.

The propelling machinery will consist in a pair of 16"x 72" inclined, high pressure, non-condensing engines, which are now being built by the Willamette Iron & Steel Works of Portland, Oregon. These engines will be fitted with piston, inside cut-off, valves, and are designed to







MIDSHIP SECTION AND SECTION AT MAIN BOILER, LAKE WASHINGTON FERRY

work at 40 R. P. M. The main shafts are 9" in diameter, and are made of hollow nickle steel. The side wheels are of the feathering type, measuring 15' over buckets.

Steam will be furnished by a Ballin water tube boiler, having 4,000 sq. ft. of H. S., built for 250 lbs. of pressure, using oil as fuel. In addition a large vertical donkey boiler will be provided on main deck.

Exhaust from engines may either be passed into the smoke stack or be condensed in a special designed exhaust ejector.

The auxiliary machinery will consist in a pair of outside-packed, pot valve Burnham pumps, a bilge and fire pump, sanitary pump, etc.

The ferry will be lighted by electricity throughout, current being furnished by a 71/2 kw. reciprocating Sturtevant set, and a 21/2 kw. Terry turbine set, for day lighting. Searchlights will be provided on top of each pilot house.

A Hyde steam steerer will be provided in engine room, with wheel stands in each pilot house, and means for hand steering in case of an accident.

The engines are expected to develop about 700 hp., giving the ferry a speed of about 15 miles per hour. The contract price is \$85,000.00.

Designs for this ferry were prepared by Fred A. Ballin, N. A., of Portland, Ore., and construction of hull in Seattle will be under the supervision of L. E. Geary, N. A., of that city.

S. S. "MATSONIA" SOON READY FOR LAUNCHING.

Captain Peter Johnson, who has been master of the S. S. "Wilhelmina" for quite some time, is now on his way to Newport News to witness the launching of the "Matsonia," the new vessel building for the Matson Navigation Company. Captain Johnson is to remain in the East until the "Matsonia" is completed, when he will bring the new vessel to this Coast.

Wm. Matson, President of the Matson Navigation Company, and A. C. Diericx, supervising engineer and architect for the company, and designer of the "Mat-

sonia," are also leaving for the scene of the launching which event is to take place on about August 9.

WORK UNDER WAY AT UNION IRON WORKS.

Three submarines are building at this company's yards, and two have just been completed and are now undergoing their official trials.

A large wooden barge is under construction and is to be fitted with five large oil tanks. This barge is to be used for transporting oil around the bay and up the rivers. The Union Iron Works Company is also developing plans for the new steel oil tank steamer for the Associated Oil Co., contract for which was signed last month. The material is ordered and will begin to arrive at San Francisco about the first of August. A great many of the machinery parts are now in the shop. Considerable repair work is on hand but no individual job of any size. A large number of boilers, for the Associated Pipe Line Co., as well as large heaters and tanks are being built. The Mining Department as well as the Drydocks is also quite busy.

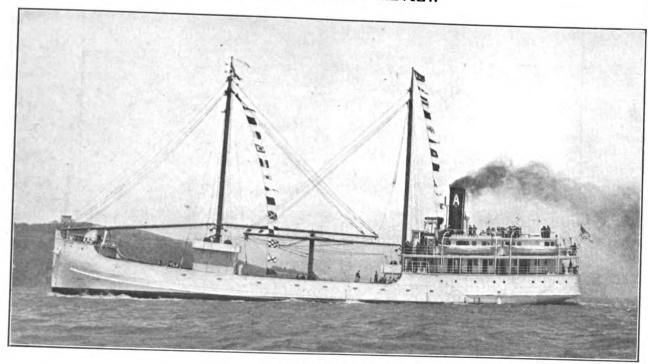
NEW VESSEL FOR THE S. S. FREEMAN CO.

The Str. "Daisy Putnam," now building for the S. S. Freeman Co., will be a wooden lumber carrier, with a capacity of about 1,100,000 ft.

The wooden hull constructed by the Matthews Shipbuilding Co. of Eureka, is about 210 ft. in length, with a 41 ft. beam and a draft of 16 ft.

The propelling machinery built by the United Engineering Works of Alameda, Cal., consists of a 131/2x 22x36x24 Triple Expansion Engine, which will develop about 650 horse-power. Steam will be supplied by two Babcock & Wilcox Water Tube Boilers, and a mechanical oil burning system will be installed.

The "Daisy Putnam" is one of the five similar vessels which the United Engineering Works is at present building for different lumber firms around the bay. These vessels are all designed for the coastwise lumber traffic, and will all be in commission within the next three months



S. S. "AROLINE"

S. S. "AROLINE" NOW IN SERVICE.

The S. S. "Aroline," which is one of the best equipped steel steamer lumber schooners ever built for the Pacific Coast trade, was recently completed by the Union Iron Works Company for the Aroline Steamship Company.

The dimensions of the "Aroline" are as follows: Length between perpendiculars 225 ft., breath molded 41 ft., depth molded 17 ft. 6 in., depth of hull 13 ft. 4 in., height of poop and forecastle 8 ft., height of winch house amidships 14 ft., draft of water 16 ft. 9 in., lumber carrying capacity 1,250,000 ft., coal or dead weight carrying capacity 1,700 tons, indicated horse-power 1,250, speed 12½ knots.

The "Aroline" is a single screw oil-burning vessel rigged as a two-masted fore and aft schooner with a straight stem and elliptical stern and a complete steel deck extending fore and aft, also a short forecastle forward and a poop aft in which are housed the principal members of the crew and the first-class passengers.

No expense has been spared to fit up the cabins and quarters in the most luxuriant manner possible for a boat of this class. The dining-saloon, social hall, smoking-room and principal officers' rooms are entirely finished in the finest mahogany.

In all there are 21 first-class staterooms, which will accommodate 57 passengers. These are all fitted with running water and all other conveniences usually fitted on first-class passenger vessels.

Besides the passenger cabin, the poop also has rooms for the captain, chief engineer, officers, and stewards. The sailors' quarters are under the forecastle.

The vessel has three water-tight steel bulkheads extending to the main deck and is further subdivided by a double bottom extending the full length of the vessel five feet in height.

This is an unusual depth for vessels of this class and affords more protection against grounding than a double bottom of only the ordinary depth. The double bottom has five separate compartments and to this extent further subdivides the vessel and makes her unusually safe.

The vessel is equipped with most modern wireless ap-

paratus, and on vessels of this size it is necessary to have two wireless operators so that there is always one man on duty.

The engines are the direct-acting inverted cylinder triple-expansion type. The diameter of the high-pressure cylinder is 19 inches, intermediate cylinder 31 inches and low-pressure cylinder 50 inches, with a common stroke of 40 inches each and are designed to give 1,250 I. H.-P. at about 100 R. P. M.

Three Scotch marine boilers with two furnaces each furnish the steam for the engines and are equipped with the Dahl patent oil-burning system, the fuel for the burners being carried in the double bottom tanks and also in a settling tank.

The S. S. "Aroline" will be operated between San Francisco and Seattle via Gray's Harbor.

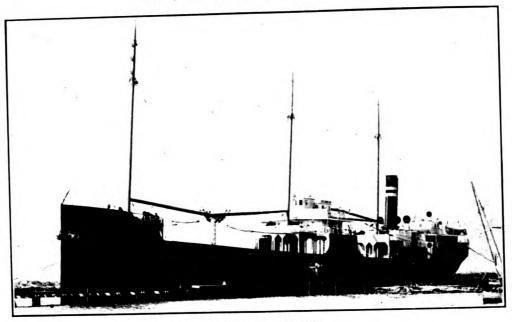
THE "EDGAR H. VANCE."

The Craig Shipbuilding Company, of Long Beach, Cal., have, during the past month, delivered the "Edgar H. Vance" to her owners, the Hammond Lumber Company.

The vessel is intended to carry 2,250,000 feet of lumber, and on her first trip she brought 2,000,000 feet with a raft in tow from the Columbia River to San Francisco. This trip was made in record-breaking time for raft-towing.

The "Edgar H. Vance" is 290 feet between perpendiculars, 44 feet beam, 22 feet moulded depth, and has a 9-foot forecastle deck and a 9-foot afterpoop deck, with a bridge containing officers' quarters, 12 feet in the main deck near midships.

She is a single screw steamer, has three steel masts with pole topmasts, and is fitted with three rigs over three double hatches for receiving and discharging cargo. This vessel is of the single deck type, and is built completely of steel, including the outside of the houses. A 40-inch double bottom, divided into separate compartments, and piped up for carrying fuel oil or water ballast, extends the length of the ship. Her main hold is divided by two bulkheads, making three separate holds. The No. 2 hold is arranged for water ballast,



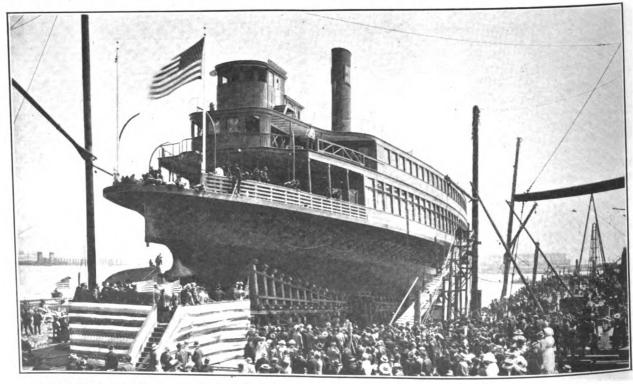
S. S. "EDGAR H. VANCE"

and has a capacity of about 1800 tons when fully ballasted.

The "Edgar H. Vance" is equipped with steam windless and double direct geared hoisting winches, which are all supplied with cut gears. The winches are of extraordinary size to facilitate the loading and discharging of large packages.

The vessel is built to full classification of the Bureau of Veritas Rules. Her tank tops, bilges, decks and fresh water tanks are all covered with bitumastic enamel. Her deck is protected with sheathing over the bitumastic. She has six hatches, 14 feet by 30 feet, which enables her to take on and discharge freight in the best possible manner. Her crew's quarters are very large, airy and well laid out, the captain's quarters and chart room being fitted in mahogany; the balance of the officers' and crew's quarters are fitted with white enamel paint.

She is fitted with a Shaw & Spiegal heaviest type towing machine. Motive power is supplied by one direct connected, surface condensing, triple expansion, marine engine having cylinders 20, 321/2 and 55 inches diameter by 44-inch stroke. The engine has air pump, bilge and sanitary pump connected with independent surface condenser. She has three boilers 11 feet in diameter by 11 feet 6 inches long, built for a working pressure of 180 lbs., also one donkey boiler of vertical, submerged head type, 54 inches in diameter by 7 feet long and built for 120 lbs. working pressure. The fuel installation is of the Dahl pressure system. The engine room is supplied with independent feed pumps, two generating sets, independent ballast pump and a special turbine pump for pumping ballast from midship holds. There are also evaporator, heater, sanitary pump and all necessary auxiliaries to make a complete motive power.



LAUNCHING OF THE STEEL FERRY BOAT "EDWARD T. JEFFERY." DESCRIPTION OF THIS VESSEL APPEARS ON PAGE 29

"EDWARD T. JEFFERY" LAUNCHED

The new steel ferry boat "Edward T. Jeffery," built by the Moore & Scott Iron Works for the Western Pacific Railway Company, was launched on July 19th and christened by Miss Flora Levey, daughter of Chas. M. Levey, Vice-President of the Western Pacific Railway Company.



"EDWARD T. JEFFERY" JUST AFTER LEAVING THE WAYS

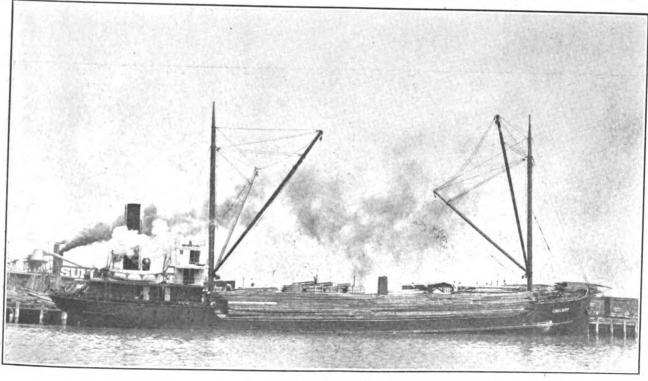
The "Edward T. Jeffery" is 230' long 42' beam, 62' 6" over the guards, 19' 6" depth moulded and 11' 6" draught. The vessel was designed by Mr. John H. Hopps of San

Francisco. The hull is entirely of steel and is provided with five longitudinal steel bulkheads. There is a steel water-tight bulkhead fore and aft, on the side of the machinery, making water-tight compartments protecting the boilers and engines. The joiner work is made unusually heavy and stiff athortship by steel arches, which are covered with mahogany panels fitted with mirrors. The seating capacity is 1400.

The entire furnishing of the upper cabin is in mahogany, with mahogany perforated seats. The upper cabin is provided with a grill room fitted with tables and chairs, while the lower deck is provided with the galley and lunch counter, all handsomely fitted up in mahogany. The boat is designed to accommodate teams as well as passengers:

The machinery consists of a four-cylinder engine, with two high-pressure and two low-pressure cylinders, which will develop a horse-power of 2200. The vessel is fitted with four B. & W. water-tube boilers with oil-burning outfit. In one hold are fitted the fuel-oil tanks, while in the other hold are fitted the two freshwater tanks. Two steam-steering gears are provided, one at each end of the vessel, as well as the hand-steering gear.

It is expected that the vessel will go into regular service about the 10th of August.



S. S. "CRICKET"

ANOTHER LUMBER CARRIER COMPLETED

The steamer "Cricket," built by the United Engineering Works for Mr. Fred Linderman of San Francisco, is 224 feet in length, 41 foot beam and has a depth of 17 feet 6 inches.

The vessel is fitted with a Triple Expansion Engine and two Scotch Marine Boilers. She makes a speed of 9½ knots loaded at sea and 10½ knots light, with a fuel consumption of 75 barrels of fuel oil a day of 24 hours.

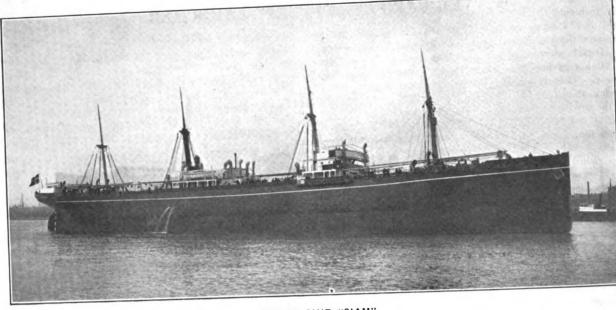
The "Cricket" carries 1,300,000 feet of lumber, and has many novel features in her design, having two sets of

cargo gear and double friction winches, capable of handling a five-ton load.

The vessel has proven particularly successful and her owners consider her by far one of the most economical and handy vessels built for this trade.

The tugboat "Henry J. Biddle" was launched from the St. Helens shipyards at St. Helens, Ore., on July 15. The vessel is expected to make her maiden voyage to Puget Sound within the next two weeks.



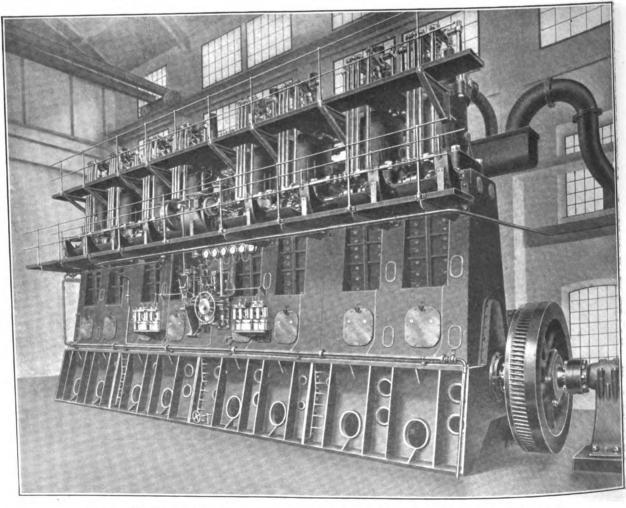


MOTOR SHIP "SIAM"

ONE OF THE WORLD'S LARGEST MOTOR SHIPS-M. S. "SIAM"

The above photo shows the motor ship "Siam," owned by the East Asiatic Company, and which, we understand, will be used in the service this company proposes to inaugurate between Pacific Coast ports and the Orient.

The principal dimensions of the "Siam" are: Length 410 feet, breadth 55 feet, depth to main deck 30 feet 6 inches, depth to awning deck 38 feet 6 inches, draft 26 feet 6 inches, displacement 13,200 tons, deadweight carrying capacity 9,500 tons, capacity of holds 500,000 cubic feet. The vessel is equipped with two Diesel engines of the four-cycle, eight-cylinder type, developing in all 3,000 horse-power. During the trial trip the fuel con-



EIGHT CYLINDER, BURMEISTER & WAIN DIESEL ENGINE FOR MOTOR SHIP "SIAM"

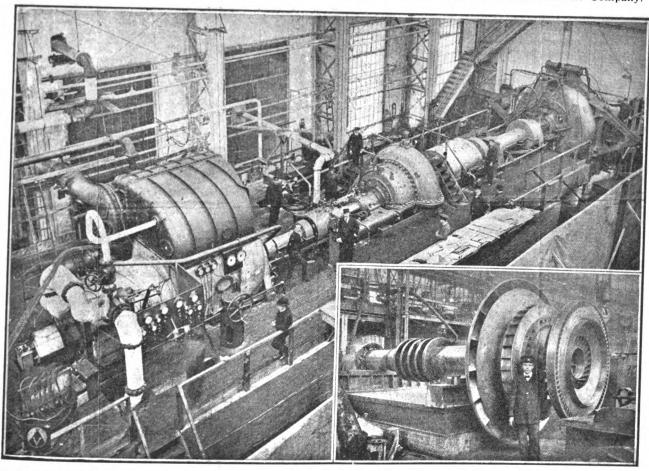
sumption amounted to 153 grammes per horse-power-hour, including the main and all auxiliary machinery. A speed of 12.4 knots was obtained.

Besides the main Diesel engines there are two auxiliary Diesel engines installed in the engine room, each of 300 horsepower, coupled to a dynamo and a compressor. The dynamo is large enough so that while running at sea sufficient current is produced to supply all the auxiliary machinery, including the steering engine, as well as for lighting the vessel. When lying in harbor the electric current is used for working the deck winches, which are electrically driven. These winches are supplied by Messrs. Biemens, Schuckert, Berlin.

At the end of the trial trip the ship was taken over by the owners and at once proceeded to the freeport, where she took on cargo and commenced her first voyage, calling at Aalborg, Gothenburg and Antwerpen and then proceeded through the Mediterranean and the Suez Canal to Japan.

In the meantime the sister ship, M.S. "Annam," has been finished and carried out her official trial trip on the 7th of June. After the trial trip she immediately took cargo on board in the freeport and started for her first voyage, calling at Gothenburg and Kristiania, and is now proceeding on the same route as the M.S. "Siam" to Japan.

The above information and the photos that appear herewith were furnished us by Messrs. Burmeister & Wain of Copenhagen, the builders of the engines used in the "Siam" and other motor ships for the East Asiatic Company.



FÖTTINGER TRANSFORMER OF TEN THOUSAND HORSE-POWER FOR SHIP PROPULSION INSTALLED ON THE VULCAN-WERKE'S TESTING FLOOR WITH STEAM TURBINE AND FÖTTINGER BRAKE. THE INSERT SHOWS THE ROTOR OF A TEN THOUSAND HORSE-POWER HYDRAULIC TRANSFORMER FOR MARINE SERVICE

HYDRAULIC GEAR FOR MARINE TURBINES

The engineering public is accustomed to being introduced to novelties in connection with power transmission on steamships and will therefore not be surprised at the latest development of turbine combinations repreby the Föttinger Transformer.

With the introduction of the marine steam turbine, various methods have been developed to utilize the advantages of a high rotative turbine speed in combination with a relatively low propeller speed. With this end in view the electric drive has been proposed and an experimental installation made on the U. S. Naval Collier Jupiter. The reduction gear, developed in England and also in this country about five years ago, and first installed on the Collier Neptune, has proven very successful and is being widely used in this country on naval vessels.

The Föttinger Transformer has the same object in

view, and consists of a rotor mounted on a primary shaft, designed as a high-grade centrifugal pump forcing water to water wheels mounted on a secondary shaft and working under similar conditions as in hydraulic turbines. The transformer is a hydraulic transmission gear intended to transmit loads up to the highest figures from a motor shaft to another shaft coaxial with the former. It can be designed for an equal number of turns of both shafts, or for transmission into lower or higher speeds, for the same or an opposite direction of rotation.

It is therefore especially adapted to serve as an intermediate gearing on shipboard, between the steam turbine and the propeller. The interposition of the transformer between the turbines and the propellers enables both to be driven at the speed which gives for each the highest economy.



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THE OIL-ENGINED SHIP "FORDONIAN"

The builders of the "Fordonian" are to be congratulated upon being the first firm on the Clyde to put to sea a vessel propelled by two-stroke cycle Diesel oil engines, especially as this ship is of the cargo-boat type, with a

single screw.

The leading dimensions of the ship are 250 ft. long, 42 ft. 6 in. beam, 16 ft. 10 in. molded depth to the main deck, and 26 ft. 6 in. to the awning deck. The "Fordonian" has a 2-ft. frame pitch, and a deadweight cargo carrying capacity of 3,300 tons on 16 ft. 6 in. draft. The draft on service is restricted to 14 ft. and the deadweight capacity is thus reduced to 2,200 tons. She is built to Lloyd's highest class for the Canadian Interlake Line, Ltd., of Toronto, for grain carrying on the Great Lakes of Canada.

The main propelling engine is a four-cylinder twostroke cycle single-acting Carels type of Diesel oil-engine. The cylinder dimensions are 460 mm. (18.1 in.) diameter by 820 mm. (32.25 in.) stroke, and the engine runs normally at about 100 revolutions per minute. These engines are illustrated in Figs. 5 to 9, and it will be seen that in the main features of the structure, steam-engine marine

practice has been closely followed.

The piston of the Carels engine is in two pieces. The forming of the piston in two pieces makes for simple castings, and when the high temperatures are considered, this is a desirable end. Water cooling is adopted for the piston, and the water is circulated by the action of the plungers, as shown, as opposed to the system of walking pipes. The piston in this engine ran cool on trial, and the stresses due to temperature would thereby be minimized.

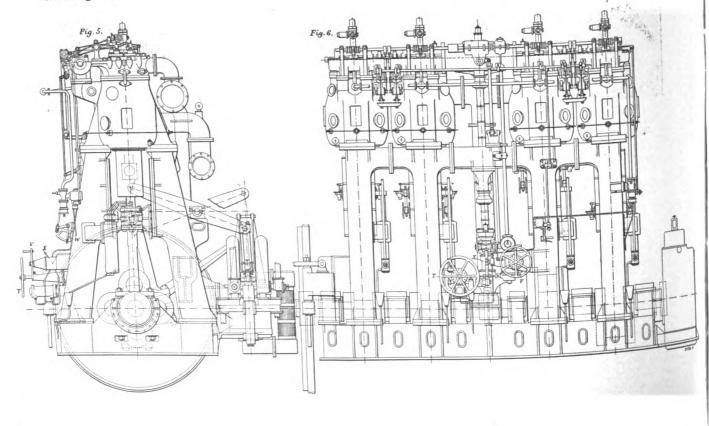
The arrangement of the engine into two units of two cylinders each permits of a two-piece crank-shaft in interchangeable halves, of the vertical spiral drive for the valve gear being taken from the center of the engine, and also of the scavenging-pumps being driven from the two center crossheads by links, as with the air-pump of steam-engines.

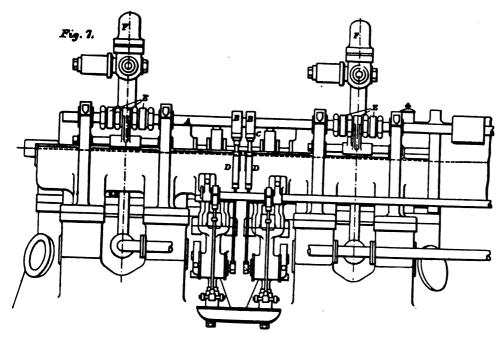
The exhaust is led down by bent cast-iron pipes from the cylinder-belt to the main exhaust-pipe running along the engine to the cast-iron silencer. These bends have internal water injection, and the silencer is also internally water-cooled and is of the cascade design.

The crank-shaft is built up, since the large stroke-bore ratio permits of this construction, and the connectingrod is standard marine practice.

The system of lubrication is interesting. For the main bearings solidified oil is used, for the crank-pin bearings the ordinary drip-feed suffices, and the bearing pressures for the main and crank-pin bearings are respectively about 300 lb. and 650 lb. per sq. in. For the lubrication of the cross-head bearing, a small lubricatingoil forcing-pump is attached to each crosshead, and worked by the swing of each connecting-rod, as shown. This system of lubrication permits of an open crank-case, and the bottom end bearings can always be easily felt by the engineer on watch. There are two guides for each, such being Messrs. Carels' practice for oil-engines. The piston is lubricated by four Mollerup lubricators, which force the oil between the piston and the cylinder; there are four inlets to the cylinder, and they are arranged to enter on the fore-and-aft and athwartship center lines.

Reference to Figs. 10 and 11, diagrammatical sketches of the valve-gear, will make the valve-gear and the reversing and manoeuvering mechanism quite clear. There are two shafts running fore and aft at the cylinder tops, and supported by brackets to the cylinder body in the usual way. The outer shaft A is the manoeuvering shaft, and to it are keyed, firstly, cams B for operating the fuel-pump's suction-valves by means of the bell-crank lever C and rod D, as seen in Fig. 10; and, secondly, the cams E (Fig. 11) which serve to regulate the amount of lift of the fuel and starting air-valves F and G respectively, and also to lift and replace the interstarting and interfuel levers from off the main cams H. Loose





upon this shaft there are two interstarting and interfuel levers Y for each cylinder.

Turning now to a consideration of the reversing mechanism and its operation, there are two scavenging-cams I operating the four scavenging-valves J, and these are reversed by turning the cam-shaft through approximately 30 deg. by extending the driving vertical shaft by means of a compressed-air servo-motor. It must clearly be understood that the scavenging-cams do not move fore and aft. There are two fuel-cams and two starting aircams to each cylinder, and the cams E, by means of the roller-raising lever, lift the interstarting and interfuel lever Y from off the cam upon which it has been working. Then the manoeuvring-shaft is moved longitudinally, and the interstarting and interfuel lever is brought into line with the fuel or starting air-cam for the required direction of rotation. Further rotation of the manoeuvring shaft rotating cams E-the interstarting and the interfuel valve levers are loose upon this shaft-causes the interfuel and interstarting air-levers, of bronze, to descend upon the requisite cam. Still further rotation of the manoeuvring-shaft and its cams E actuates the wedge-piece L through a roller and spindle, and so first causes the opening of the starting air-valve. Starting air is thus admitted to all four cylinders, and then for two cylinders a rotation of the manoeuvring shaft-cams, actuating now the wedge-piece L, causes the starting air to be gradually cut out and the fuel to be gradually

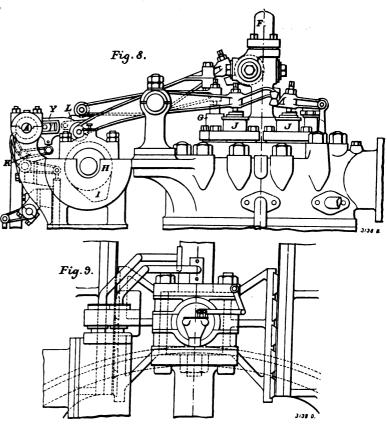
The fuel-pumps-of which there are four-one for each cylinder-are operated by eccentrics from the camshaft, and at the same time as the fuel oil is being cut into the first two cylinders the cams shown at B operate through bell-crank levers, and so control the suctionvalves of the fuel-pumps, and fuel oil is thus delivered to the cylinder. After the two cylinders are firing the further rotation of the manoeuvring-shaft causes exactly the same cycle for the other two cylinders, and all cylinders will then be running on fuel.

The feature about the interesting valve-gear is the wedging action whereby the starting air is gradually cut out and the fuel-oil gradually cut in. This gives an even turning moment all the time. At the commence-

ment the air pressure, 800 lbs. to 1,000 lbs. per sq. in., ensures that there is a large starting torque; further, the design of the starting-valve mechanism necessarily gives that large starting torque at all positions of the cranks, and the wedge action makes for an even turning movement throughout the period of engine acceleration. There is no shock due to the air being suddenly cut off and the fuel suddenly cut in. It is a gradual process, the one merging into the other.

The control of the engine is by means of one wheel and two levers on the starting platform; one lever, X, Figs. 5 and 6, controls the compressed-air engine, which

gives the cam-shaft its angular displacement by raising or lowering the vertical driving-shaft, and also gives the manoeuvring-shaft its fore-and-aft movement. The other lever, W. Fig. 5, controls the fuel. The wheel V. Figs. 5 and 6, operated by hand, gives the manoeuvringshaft its rotary motion. As seen in Figs. 10 and 11, the cams upon the manoeuvring-shaft act upon the suctionvalves of the fuel-oil pump. Hand control is also provided by the handle on the column, which actuates a shaft running fore and aft on the engine, and so sets all





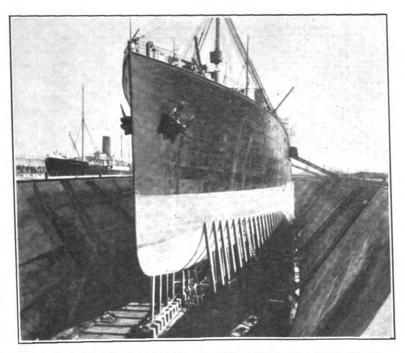
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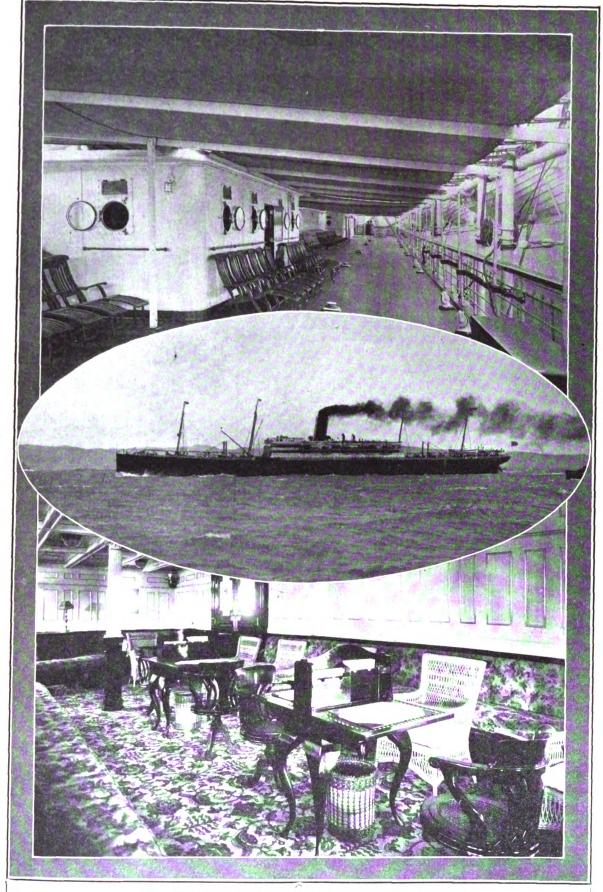
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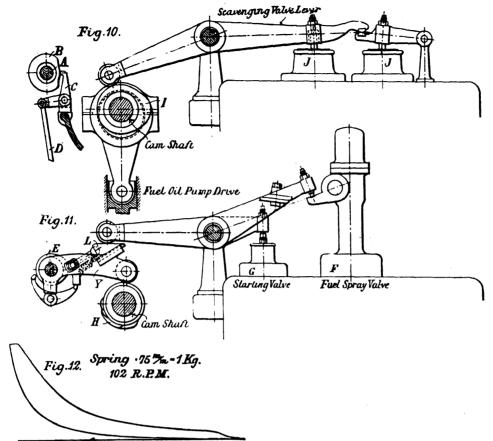
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DETAILS OF ENGINES OF "FORDONIAN."

BUILT BY THE CLYDE SHIPBUILDING AND ENGINEERING CO., LTD., PORT GLASGOW.



the fuel-pump suction-valves. The small dial seen above the hand-wheel (Fig. 6) indicates the position of the valve-gear. Although compressed air is used, as stated, for actuating the vertical shaft, causing the angular rotation of the cam-shaft and the rotation and displacement of the manoeuvring-shaft, hand-gear, as shown in Figs. 5 and 6, in emergency may be used-viz., wheel T.

The description of the valve and manoeuvring-gear is of necessity long; at first sight the valve-gear may appear complicated, but this is not the case. It is true that, compared with some designs, it is composed of many parts, but the function of each is simple and defin-This vessel on her regular route from Montreal to Port Arthur must pass, each trip, through some 30 to 40 locks, and this demands manoeuvring qualities far above the average, and that the engines must be capable of being stopped, started, and reversed in a very short time. Stopping from full speed ahead was on trial accomplished in two or three revolutions of the main engines, and reversals from full ahead to astern took six seconds. A trial of manoeuvring was then made, and reversals were carried out from orders given from the bridge to correspond with the actual conditions in service of this vessel; 63 reversals were accomplished in 42 minutes, with more than half of the high-pressure com-The auxiliary steam-driven pressed air still unused. compressor was, of course, in use for this trial.

The system of having one fuel-pump for each cylinder makes for easy regulation of the quantities of fuel-oils supplied, and so permits of a very slow speed of revolution. On the trial trip forty-six revolutions per minute was the minimum attained; but when the final tuning-up has been accomplished, and all cylinders at all speeds are developing exactly the same power, a minimum speed of revolution of about thirty-five revolutions will no doubt be achieved

No governor is fitted, as rough weather is not normally encountered, and the heavy fly-wheel, some 9 ft. in diameter and about 7 tons in weight, is relied upon.

The compressed air for the injection of the fueloil into the working cylinders, and also for the starting of the engine, is supplied by a Reavell's marine-type reversible three-stage compressor.

Air storage for starting purposes is provided by four welded steel bottles of 235%-in diameter by 8 in. long, and that for fuel injection by one bottle, 1 ft. in diameter by 3 ft. long. The pressure of the fuel injection aid and the starting air is 850 lbs. per sq. in., and for slow-running engines, such as this, this pressure is quite

usual practice. The time taken by the auxiliary compressor to fill up the air storage provided is about one hour. The remainder of the auxiliaries are normal steam practice, and call for no special mention.

The weight of the main engine alone is about 100 tons, and if the auxiliaries are included, all ready for work, 150 tons is the weight of machinery aboard.

There is fuel storage in two oil tanks placed on both sides of the oil-fired donkey boiler, as seen in Fig. 3, and two ready-use tanks are placed aft of the engine room, and are provided with steam heating coils, whilst the oil is filtered, on its way to the fuel pumps of the main engines, through 15-gallon filters in the engine room. In all 105 tons of oil fuel is carried, whereas with the sister steamships 250 tons of coal is required. The consumption per day for all purposes is 5 tons of oil fuel, against 14 tons of coal.

The fuel consumption of this engine is 0.47 lb. per brake horse-power per hour, and this is good practice for two-stroke cycle engines with the scavenging-pump and air compressor driven off the main engine. An indicator card taken off this engine is reproduced in Fig. 12. An inspection of the diagram shows that combustion was good and that the bore-stroke ratio adopted by Messrs. Carels, together with the main features of the scavenging design, ensured an efficient and complete combustion. The pressure of compression is 490 lbs. per sq. in. The fuel injection line shows a good adjustment of the fuel-valve for the fuel used, which was Scotch shale oil. The mean effective pressure from this card is 90 lbs. per sq. in., and is the usual figure under normal conditions, without any attempt at forcing

The indicated horse-power at 102 revolutions per min-

ute and 90 lbs. per sq. in. is 970; 10 knots were achieved with the engines doing 128 revolutions per minute. The maximum revolutions were 140, the normal about 102, and the minimum 46. The results will undoubtedly be improved upon when the engines are finally tuned up, as prior to the trial trip they had only been run in dock trials for twelve hours in all. This is exactly the same treatment as is given to steam engines.

The general arrangement of the engines and auxiliaries is well thought out to give the greatest possible immunity from breakdown. This is a point of some importance with single-screw ships propelled by a comparatively new prime mover.

The crank-shaft is in two interchangeable pieces, and there are two scavenging-pumps of large capacity. The auxiliary air compressor is of half the capacity of the main compressor, and since the vertical shaft drive for the valve-gear is in the center of the engine, should the compressor give out, one scavenging-pump fail, or even the crank-shaft break, the main engine will still develop more than half its normal power. This type of engine seems very suited to the propulsion of cargo boats, and the saving in space consequent upon the adoption of the Diesel engine for this ship is five frame spaces, aggregating 10 ft., some 33 per cent. of the machinery space.

LARGE MOTOR VESSEL LAUNCHED AT HONG-KONG.

What is understood to be the largest motor vessel built outside of Europe was recently launched at the Taikoo dock yard in Hongkong for the Asiatic Petroleum Co. The vessel is of 600 tons burden, 220 feet long, 32 feet beam, and 9½ feet deep. It is constructed throughout of steel, with two large holds fitted with special girder work, and with elaborate and spacious cabin fittings for officers and crew. It is fitted with two 240-horsepower, four-cylinder Bolinder motors, using crude oil fuel, direct reversible and without electric ignition system, and has a complete installation of electric light, electric pumps, and special steering gear, all driven by independent motors; the windlasses also are operated by independent motors. The vessel is expected to make about 10 miles an hour on an economical It will carry about 40,000 tins of kerosene when fully loaded. It is without funnels and carries one pole mast only. The fuel ordinarily used is Tarakan crude oil, but the vessel can be operated on any crude oil or kerosene. There is great interest in this type of vessel along the China coast, for if successful they can be made to serve certain lines of the import trade economically and efficiently as compared with small coasting boats and barges now generally employed for the purpose. Motor vessels of smaller type already are revolutionizing communication in the rivers and canals of the lower China coast and in the interior waterways reached from the coast.

ANOTHER MOTOR SHIP LAUNCHED.

We are advised by Messrs. Burmeister & Wain, of Copenhagen that the second motor-ship for Rederiak-tiebolaget "Nordstjernan," Stockholm, was launched the 21st of June, 1913, and was named "Pedro Christoffersen." This ship is a sister ship to the motor-ship "Suecia," viz: Length 362 ft., beam 51 ft. 3 in., depth 25 ft. 6 in., draught 23 ft. 1 in., d. w. capacity 6550 tons. The total propulsion power is 2000 I. H. P. in 2 four-stroke Diesel engines.

A DIESEL-ENGINED SHIP FOR AMERICAN SERVICE.

The placing of the "Hagen," which is driven by Diesel engines, in service from Port Arthur to Kingston and Toronto is of interest to the engineering world because this is the first large Diesel-engined ship to enter the American service exclusively. The "Hagen" is driven by an 850 horse-power Carels-Diesel, two-cycle marine engine. The ship made the Atlantic passage in 17 days, 21 hours, developing 800 horse-power at 97 revolutions and using three and one-half tons of fuel per day. An excellent feature of the engine is the maneuvering ability, as shown in the builders' trial, when the vessel made 63 maneuvers in 41 minutes, reversing from full speed ahead to full speed astern, qualities which were again demonstrated at Montreal, when the ship was maneuvering through the locks in the canal.—Scientific American.

RULINGS RE EXPERIENCE ON MOTOR VESSELS AND LIFE-SAVING EQUIPMENT ON MOTOR BOATS EXPLAINED.

Under date of June 23, 1913, the Steamboat Inspection Service, in response to a request for information in regard to the credit to be given for experience had on motor vessels, advises:

"This bureau is in receipt of your letter of the 18th instant, your file No. 393, referring to Section 34, Rule V, General Rules and Regulations prescribed by the Board of Supervising Inspectors, regarding the experience required of an applicant for original license as pilot, and requesting the opinion of the bureau as to whether or not an applicant is entitled to an examination for an original license as pilot, who has obtained his experience wholly upon motor vessels of a class not subject to inspection by this service and which are not required to carry a licensed master or a licensed pilot.

"In reply you are informed that the provisions of Section 34, Rule V, General Rules and Regulations, do not restrict the experience referred to to motor vessels of a class subject to inspection by this service and which are required to carry a licensed master or licensed pilot, and therefore, the experience may have been obtained on motor vessels not subject to the inspection of this service. You will understand, however, that in the last analysis the Local Inspectors are the judges as to whether the applicant has passed the required examination and is qualified for the license for which he has applied."

There appearing to be some misunderstanding as to the class of motor boats subject to the last paragraph of Section 6. Rule III. General Rules and Regulations, as amended, January, 1913, in regard to life-boats and life-rafts required on inspected motor boats, you are informed that the provisions of the paragraph referred to have reference only to motor boats inspected by this service, and have no reference whatsoever to motor boats not subject to inspection equipped according to act of Congress approved June 9, 1910.

The Alaska Pacific Steamship Company have issued a very attractive folder which contains detailed information concerning the steamers they operate and the different routes they cover. This folder is nicely illustrated and on the whole is good to look at and through.



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A PLEA FROM A PRACTICAL MAN FOR THE RESTORATION OF OUR MER-CHANT MARINE IN THE FOREIGN TRADE AND FOR NATIONAL DEFENSE

By ROBERT DOLLAR

Many newspapers and public men are advocating the restoration of the Merchant Marine, but the general public are not informed as to the true situation.

It is well known that the rider on the Canal Bill permits the registration of foreign ships to engage in our foreign trade. This law has been on the statute books many months and the Commissioner of Navigation in his annual report informs us that not a ship has taken advantage of it. Those who are intimate with the shipping trade know that no ship would change to the American flag, the reasons for which are given in this article.

The public should be informed why the American owners of about two million gross tons of steamships flying foreign flags did not fall over each other to immediately give their country a Merchant Marine. The reason is that the laws of the countries under whose flag they are sailing are much more favorable to shipowners. in fact, the laws and regulations of the United States are such that it would mean bankruptcy to any who would attempt to run an American steamer in the foreign trade, in competition with the ships of other nations. It might be said in contradiction to this statement that there are six American passenger steamers running from America to the Orient. This is true, but they are owned by railroads, the Pacific Mail Steamship Company and the Great Northern, and in our great efforts to build up a Merchant Marine our laws prohibit them from running through the Panama Canal.

In detail the causes that have forced our ships out of the foreign trade are so many that in an article of this kind I could not enumerate them all, but will give a few facts.

In measuring cargo steamers, the American measurement makes them about 30 per cent. larger than any of the other nations, so that an American cargo steamer in the foreign trade has to pay foreign nations 30 per cent. more tonnage tax; 30 per cent. more for dry docking, wharfage, pilotage; in fact, 30 per cent. more for all charges that are based on the tonnage of ships, and there is no corresponding benefit to our country in any way.

Take two concrete examples: the steamer "Bessie Dollar" measures according to the British measurement 2,797 net tons; American net tons 3,679. Another illustration: the steamer "Hazel Dollar" according to the British measurement 2,803 net tons; by American measurement 3,582 net tons. These two cases are sufficient to show that if these vessels were placed under American register they would be penalized to the extent of paying more than the ships of any other nation with whom they were competing.

Foreign cargo boats do not generally carry quartermasters. The wheelsmen are selected from the sailors. The large American steamers on this coast must carry four. Then in the engine room one extra engineer also is added and three water tenders, men who do nothing but draw the pay they do not earn. No foreign cargo ships carry them; in fact, the very name of water tender is unknown on a foreign ship. If you spoke of it to them as I have, you would get the reply, "What is that, anyway?" Then by the new law just enforced, one extra mate is added, and another new wrinkle, if your crew exceeds fifty you must put a wireless plant

on the vessel and carry two wireless operators. All this totals up, including board, \$8,220.00 per annum, according to the scale of wages now in force on the Pacific Coast.

4	Quartermasters (\$70 each per mo.)	280.00
1	Engineer (\$80 per mo.)	80.00
	Water tenders (\$75 each)	
2	Wireless Men (at \$50 per mon.)	100.00

\$685.00 \$8,220.00

Amounting in one year to

The inspection requirements as to fire protection and life equipment are much more drastic and more expensive on American vessels than those of other nations. In boilers the American inspection is unnecessarily severe. For instance, they demand a hydrostatic pressure applied once a year and one-and-a-half times the working pressure, thereby racking the boiler and pipes so that it takes the engineer a month at least after each inspection before they get over this excessive test. The tensile strength of British boiler steel plates is 62,000 lbs. The American is 65,000 lbs. and the chemical analysis of the American is better than the British, showing that American boilers are better when new than British. No other nation calls for this annual test unless a boiler is weakened for some reason, and strange to say statistics show that more American boilers explode than British although when new the American boiler is superior to those of foreign build.

Foreign inspectors are considerate in not taking up the ship's time and their inspection does not interfere with loading or discharging of cargo. By a new U. S. regulation when time for the yearly inspection, the ship must be stopped at the first American port at which she calls and submit to same. We used to be allowed to bring the vessel to her home port where time and money could be saved both to the Government and owners: when it only takes a reasonable time all foreign nations allow this. Then the American wages are higher than in any other nation. I have just read a book by Secretary Redfield in which he explains that the high American wages are completely offset by the greater efficacy of Americans. I have been wondering how he would explain this remarkable fact that it takes more men to man an American ship than those of any other nation, the foregoing figures amply show this. Now another illustration will suffice:

> Cost to Op- Deadweight Lumber car-Capacity rying capacity erate per

British steamer day 3,200,000 ft. Str. "M. S. Dollar"....\$100.81 6,600 American steamer 1,100,000 ft. Str. "Grace Dollar"... 133.15 2,300

Comment on this is unnecessary, although hundreds of similar examples could be given.

Mr. Peabody has just written a book on our Merchant Marine when we had the largest and by far the best in the world. At that time no ship could compare with our clipper ships. The writer explains why by giving comparison of the cost of operating the American ship on a voyage to Europe and back at £513.14.4 compared with a British ship at £1083.8.8. Now the tables are



completely turned as much against as they were in our favor in 1805.

As to various theoretical plans proposed to reinstate us in the foreign trade the following are proposed:

To assist the American vessel Congress proposed to give us five per cent. of the duties on the goods that we carried from foreign ports. Some cargoes would be free of duty and others would be less or more, but if a vessel averaged \$1000.00 a trip from the Orient that would be \$3,000.00 a year, a mere pittance, not worth talking about. As outward bound there would be no advantage over the foreign competitor, with the extra cost of useless extra men required by our regulations and the much higher wages paid to Americans, no shipowner would ever consider changing the flag for any such sum.

Seeing that a direct subsidy is out of the question and cannot be considered, we need not consider it.

Then we are told by the Sailors' Union that to pass the La Follette Bill would undoubtedly give us a Merchant Marine, although it would increase the cost of freight, but the dear American public would pay for it, the plan being for Congress to increase the sailors' wages of the world. Rather a big undertaking even for a body as powerful as Congress. This is an era of trying to decrease the cost of living, not to increase it.

If we are ever going to engage in the foreign trade successfully, we must come back to the simplest way and the only practical one which does not cost our country one cent, namely:

In the foreign trade, permit us to operate our steamers the same as all other nations are doing who are our competitors. Give us no advantage whatever, only put us on the same basis: the shipowners will do the rest. In theory all the others appear good to their advocates, but this is the only practical way. As proof of its feasibility, it is being done now with about two million tons of steamers owned by Americans and successfully operated under foreign flags; this is no experiment, it is an accomplished fact. So it goes without saying that it could be done as successfully under our flag if the conditions were the same as under foreign flags and at no cost whatever to the United States. Furthermore, some of those vessels are carrying British naval reserve crews instead of sailing under our flag and carrying our naval reserves, thereby strengthening the British navy instead of our own.

Then in a few years when our shippards could compete, we would have what all politicians call for at election time: American ships built in American shipyards by American workmen and manned by American sailors, owned by American shipowners, and furthermore, operated to the benefit of our manufactories and the good of our country, but one of the most important results would be to provide our Government in time of need with the means of moving our battleship fleet from one side of our country to the other without the humiliating experience of having to get foreign colliers to permit us to do it as we had to do when our battleship fleet went around the world, and at this present time our Government has some twenty large British tramp steamers on the way from Norfolk to this coast, bringing coal for our fleet. No fault can be found for their not employing American ships, as American cargo boats in the foreign trade do not exist.

Furthermore, we would ask our Congressmen to stop introducing the multitude of bills (16 are now before Congress) which we see increasing every year, the sole purpose of which is to restrict and restrain the operation of ships and incidentally to restrain and restrict our

commerce, and strange as it may appear, we never see one to enable us to operate ships in the foreign trade.

The object of writing this article is to endeavor to show our countrymen the truly helpless condition we are in either from the point of view of foreign commerce or from our helpless condition if we were unfortunate enough to get into war with a first-class power.

We have a splendid navy, but without merchant vessels as auxiliaries in time of war it would be impotent. The time has arrived when Congress should be compelled to take up this all important subject in dead earnest and appoint a commission of practical men who thoroughly understand the situation. They must not be theorists, faddists, or politicians, but level-headed business men. The result of their advice if followed would be a Merchant Marine.

We well remember the political commission headed by Senator Gallinger who visited the principal cities of the United States. They started out and were guided by one impracticable idea, the result being total failure and the final extermination of the few ships we had in the foreign trade at that time.

"OUR MERCHANT MARINE."

We are glad to be able to publish the following article which was written and sent to the "Pacific Marine Review" by a licensed officer employed in one of the largest companies plying in the American coastwise trade.

The writer of the article is very much in earnest and if others would also arouse themselves and join in the fight for the restoration of the American Merchant Marine something would be accomplished.

Our correspondent writes:

"Our Merchant Marine at this time should enlist the closest attention of every man worthy of the name American.

"That our need is great and growing requires no tabulated statistics to prove to the most casual observer.

"The grave fact is that if this subject is not taken up seriously and remedial legislation soon applied, we will be found in the unhappy predicament of the producer being at the mercy of the common carrier. And our national defence and outlying possessions will be easy prizes for our enemy. A navy is always dependent upon the merchant marine in times of national peril. Does not history teach us that the men of the merchant marine have been the bulwark of our navy and a great and sometimes concluding factor in times of real danger. Little wonder then that we are advised by foreign interests that we need no merchant marine for without a merchant marine we are as helpless as a toothless watch dog.

"To our shame be it said that through neglect of our maritime interests, we have permitted our shipping with 'Old Glory' at the peak to disappear from every trade, save the coastwise, and this is now engaging the serious and determined attention of 'our friends across the sea.'

"There is no nation worthy the name or one that aspires to be classed among the greater powers, which does not with diligent concern foster the ships flying its flag.

"The sailor, cajoled, deceived, and misled has caused the ship owner in self-defense to place his ships under an alien flag.

"Slowly but surely the seaman is beginning to realize just how pliant a tool he has been in the hands of the enemy of our merchant marine, whose agents are so



actively employed in their work of driving our flag from the sea.

"Let me give you an illustration of the absurdity to which they will stoop. A speaker at a gathering of representative business and professional men in the East some time ago said:

"'We will have a merchant marine when every sailor has a stateroom and bath, not till then.'

"The writer started to go to sea in 1879; has gone from the fo'castle to the cabin, in sail and steam, sailing in some of the noblest products of our American ship-yards, such as the clippers 'E. B. Sutton' and 'S. P. Hitchcock,' and claims to know something of the lights and shadows of those 'that go down to sea in ships,' and the lives they live. He knew then, as he and every other fair-minded sailor knows now, that our ships are among the best equipped and navigated of any on the globe.

"The result of some of the unwise agitation unquestionably inspired by our competitors is that our sailor has neither stateroom, nor bath, nor ship, for the ship he must sail in if he will go to sea is under another flag, where such things as staterooms and bath are held back until the more important question of enough and the proper kind of food are secured.

"We hang our heads with shame and sorrow that there are such men in our midst wearing the senatorial toga and acting as if they were bearing a retainer from some foreign steamship corporation.

"It requires the courage of an Abraham Lincoln to stand in our halls of Congress in opposition to those who say they are Americans but are not, and demand protection for our American ship owners. History is being made by the moment to-day and just retribution will surely follow such traitors to their flag.

"The economist proves to the simple that we can ship our freight cheaper in foreign bottoms.

"The array of figures is imposing—to say the least.

"How dangerous is the lie that is half the truth.

"Dangerous equally to the deceiver and the deceived.
"Like the ice that is too thin to walk upon, it looks all right, but trust it, and you are taken in as we have been.

"The freight is less, there is no doubt of that at all. And our exporter, and the importer, grasps at it as a good stroke of business. That is how he makes his money.

"He ignores absolutely the fact that every dollar so expended is gone to our opponent; adding just so much to his strength.

"Whereas, every dollar spent in our own ships goes to the merchants of our country, adding just that much to our national prosperity.

"Just so surely as the combined income from the several members of a family by that much increases the prosperity of that family, so is the effect upon the State and Nation.

"Surely this is so apparent and self-evident as to require no further elucidation.

"It is not my purpose to extend this article with statistics: they are easily secured at Washington and are a stupendous indictment of our nation for its apathy in matters of our merchant marine.

"It is my desire to emphasize as vigorously as possible the need of concerted action now. For it is now, or perhaps never.

"Two billion dollars and more is year by year being handed our friends across the sea for carrying our commerce.

"To this we are asked to add the price of our 'Panama Canal' and at the same time we are to keep it in repair.

"There are men in Congress to-day who hold that we should admit foreign ships to trade on an equal footing with our remaining few ships. Do you know what that means?—it means the death of all that now remains of our merchant marine.

"Agents of foreign shipping interests are at every point of advantage to shut off agitation on this subject.

"Even in the middle west there is an interest as never before in matters relating to shipping as a whole and, but for the ingenious strife stirring agents of the interests whose dividends are endangered, the greatest factor for the rehabilitation of our merchant marine would come from the interior where a few years ago there was no interest in such matters.

"It is my opinion, based upon much thought, that the interest, at a merely nominal rate, on the money we spend annually on our foreign commerce would give us the finest merchant marine of any in the world.

"Let us convince our legislators we want and must have ships under our own flag to carry our commerce; and, that we will not spend our millions improving our harbors and hundreds of millions in building canals and then surrender them to our smiling competitors across the sea.

"We may aspire to national greatness when we prove to the world we are a 'Government of the people, by the people, and for the people,' and not for foreign exploitation."

AMERICAN VESSELS AT CALLAO, PERU.

Twenty-six registered American sailing vessels and I registered American steamship arrived in Callao in 1912, representing a total of 21,498 tons. These vessels brought cargoes of lumber, valued at \$270,397, from ports in Washington, Oregon, and California, and all the sailing vessels cleared for the United States in ballast. The steamship was the "Damara," of San Francisco, the first American steam vessel in many years to bring a cargo to Callao. From here it sailed for Coronel to load nitrate for the United States. In 1911 there were 21 American sailing vessels making this port, bringing cargoes aggregating about \$239,368, while in 1910 there were only 13.

TIME-BALL FOR SEATTLE.

The Branch Hydrographic Office at Seattle is requesting the views of shipmasters, and others interested in shipping at that port, as to the advisability of establishing a time-ball at Seattle and also as to a suitable location for same. In a communication on this subject the hydrographer at Washington, D. C., informed the Branch Office at Seattle that the Navy Department is not committed to the work of extending the time-ball system. but on the contrary looks forward to the day when time-balls will no longer be a necessity to navigators, as they will receive time signals by radio (wireless) telegraph.

It is thought by some that time-balls are not nearly as accurate nor reliable as the sound signals, and that all ships should now be fitted with a small set of radio apparatus, for receiving the time signals by radio at sea as well as in port, if they are not already provided with a radio outfit.

The Branch Hydrographic Office at Seattle recently moved its headquarters from Port Townsend to that port. Their offices are now located in the Lowman Building, First avenue and Cherry street, where the lieutenant in charge, S. H. Lawton, Jr., will be glad to have all shipmasters, officers and shipping men call to get acquainted and see what has been done to improve the service.



FREIGHTS AND FIXTURES.

The customary monthly freight report prepared for the "Pacific Marine Review" by Messrs. Page Bros. of San Francisco, is published herewith:

July 26, 1913.

In our last review, rates of freight for steamers were ruling low and a determined fight was on between owners and shippers to gain their respective ends, which has lasted during this month; in the first part in favor of the charterers, but to-day shows a slight victory for the owners.

The wheat crop up North has improved and new business has been done for the Orient and Australia, and altogether we do not deem it unwise to predict a slow but sure betterment in freights, especially for the final quarter of 1913. We now record the steamers chartered in July:

Str. "Christian Bors," re-chartered by Davies & Fehan for August loading @ 5/3 on the dead weight, delivery Puget; re-delivery Sydney.

Puget; re-delivery Sydney.

Str. "Anglo Californian," by J. J. Moore & Co., Inc., 4/6 delivery Puget; re-delivery Newcastle/Pirie, Aug./ Sept.

Str. "Bellorado," by Balfour, Guthrie & Co., Sept. loading 5/. delivery Puget; re-delivery Newcastle/Pirie.

Str. "Thor," by Balfour, Guthrie & Co., Sept. loading 5/6 delivery Portland; re-delivery North China.

Str. "Ken Kon Maru," by The Robert Dollar Co., 5/. delivery Vancouver; re-delivery China, which finishes the year's charter this firm has had her under.

Str. "Hartington," by Royal Mail Packet Line, 5/9 delivery Portland; re-delivery Hongkong or Manila, August loading.

Str. "Indramayo," reported fixed from this Coast to Japan at 5/. for the trip over. The charterer's name has not been divulged.

Str. "Strathdene," 5/. Aug./Sept. by Pacific Export Lumber Co., delivery Columbia River; re-delivery Calcutta

Str. "Earl of Elgin," for Sept./Oct., fixed by M. H. Houser of Portland @ 40/. per ton, wheat from Portland to St. Vincent for orders United Kingdom or Continent.

Str. "Bellorado," @ 40/. same voyage by Balfour, Guthrie & Co., the latter however having an additional option of sending vessel with lumber to Australia at 5/. on time, as previously noted above.

The above charters for grain show decided strength, the only former charter in the same direction having been the "Harlow" for Sept./Oct. @ 36/3. For sail tonnage to United Kingdom from Portland, 41/3 has been bid for a handy vessel, "Birkdale," Oct./Nov., which owners have declined, asking 42/6 for orders; 40/. Cork for orders would be paid for large sail vessels.

Ship "Douguay Trouin," about 3000 tons dead weight, was chartered this week to load barley from San Francisco to England at 39/. per ton. So far only three ships have been chartered from this port for barley, though there will be fully as much of this commodity to ship as last year.

Bktne. "Alta," chartered by A. F. Thane & Co., lumber from British Columbia to a direct port in South Africa at 75/. per thousand feet.

Ship "William T. Lewis," by Pope & Talbot @ 79/3, lumber Puget Sound to direct port South Africa.

Schr. "King Cyrus," by Gibson & Co., lumber from Grays Harbor or Col River at 51/3 to a port in New Zealand.

Lumber freights to West Coast are weak at 47/6 direct Port.

H. E. MOSS & CO.'S STEAMSHIP CIRCULAR.

Under date of Liverpool July 1, 1913, H. E. Moss & Company issued their semi-annual steamship circular and which contains the following:

"We are pleased to record that since the issue of our last semi-annual Circular of January 1st, 1913, the Steamship Trade, as can be seen from the many published reports of private and public companies, has prospered far beyond any expectations, and our predictions for the last few years have been fully realized.

"In Shipping, as in everything else, the unexpected frequently happens, but no one could have anticipated that within a few months this country would have passed through such serious times, both politically and financially, which naturally dislocated business and caused a temporary setback in freights. Happily the clouds are now dispersing, and when normal conditions are again established, and the new crops over the world have to be moved, and our American cousins have settled their new tariff legislation, we may expect an improvement, and steamship owners will have nothing to complain of for some time to come.

"The amount of tonnage under construction at the beginning of the year, as we all know, exceeded in this country alone over 2,000,000 gross register tons, and was the highest on record, but when the coming reports of Lloyd's for the past half-year are published, the previous record will, we fully expect, be exceeded. Fortunately for the majority of steamship owners, but not for the unfortunate builders, most of the new work is being held up by the exactions of the men engaged in its construction. Great delays are being experienced in the delivery of all new vessels, in many instances by fully a year, but this may prove to most steamship owners a blessing in disguise, as there are very few orders presently in the market for tramp steamers, the enquiries being for liners, tankers, and other special classes of vessels; consequently, not much risk of an excess of tonnage for some time to come may be anticipated, as undoubtedly the trade of the world is greatly increasing and developing.

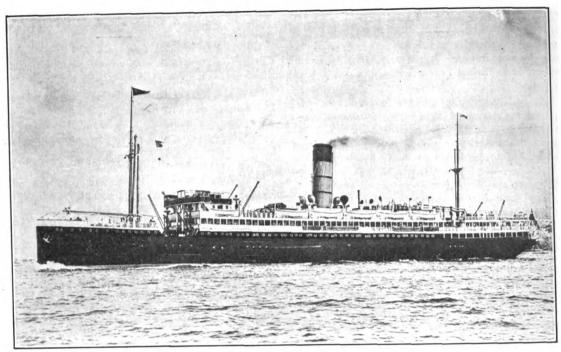
Our own Board of Trade returns of Imports and Exports for the last six months will, we think, exceed those of the same period last year by about £50,000,000. Most of the shipbuilding and engineering works at home and abroad are full to overflowing with orders, and have sufficient to keep them occupied for the greater part of 1914. Prices for new steamers continue to increase, and if the further demands of the workmen are conceded, will advance still higher; consequently, it is doubtful if we will ever reach the low level of former years. Very handsome profits have been realized by those far-seeing owners who contracted ahead.

"Many second-hand steamers have been sold at high prices, but the recent fall in freights has created a greater desire on the part of many owners to sell, with the result that lower prices than previously indicated have been accepted.

"Oil fuel for steamers has become more general, and as years advance will further increase to the great advantage of tank steamer owners, but a great deal has yet to be learnt before motor engines are a perfect success, especially for large vessels.

"The opening of the Panama Canal may be delayed another year, but when it is completed, we may expect great developments to take place in the trade of the world."





S. S. "WILLOCHRA"

NEW STEAMER FOR SAN FRANCISCO-NEW ZEALAND SERVICE.

The growth of the passenger trade to New Zealand and Australia has made such progress as to warrant the Union Steamship Company replacing the R. M. S. "Aorangi" with a new vessel, the SS. "Willochra, is larger than the R.M.S. "Tahiti. The SS. "Willochra" will sail from San Francisco on her first voyage on the 15th of October. This new vessel is of 12,000 tons displacement, and was built by W. Beardmore & Co. at Glasgow in 1912. She has accommodation for a large number of first, second and third class passengers and every modern improvement for their comfort. In the first class there are a number of one, two, three and four berth cabins. All rooms are large, lofty and cool.

The dining-room runs the full width of the ship. The music room is light and airy and the ladies' lounge is large and comfortable and situated directly amidships.

The "Willochra" has proved herself an excellent sea boat on trial trip to Australia, and is built with every regard for the safety of passengers, having a double bottom with watertight compartments.

The lifeboat accommodation is more than ample to provide for all passengers and every member of the crew. This, however, has always been the practice of the Company on their large steamers. The boats are fitted with Welin's Patent Quick-Acting Davits, Mills' Disengaging Gear, and Welin's Patent Chocks.

Hospitals, infectious and non-infectious, have been placed aft on the promenade deck, clear entirely of passengers. These hospitals have been fitted with all the most modern and best improvements. A large dispensary is arranged adjacent to the Doctor's room.

There is also a complete system of wireless telegraphy so that the steamer can be in touch with the outside world for practically the whole of the journey. Telephonic communication is also arranged between the various public rooms and different points of the ship.

A Clayton Fire-Extinguishing apparatus has also been fitted with all necessary appliances.

MR. RUDOLPH BLOHM VISITS PACIFIC COAST PORTS.

Mr. Rudolph Blohm, whose father is a member of the shipbuilding firm of Blohm & Voss of Hamburg, builders of the two sister ships of the SS. "Imperator," visited Portland during the early part of July and seemed very interested in shipping at that port.

Mr. Blohm called at the headquarters of the Commission of Public Docks, the Chamber of Commerce and some of the representative shipping firms, but the only information he imparted was the fact that he was inspecting every harbor on the Pacific Coast to obtain data for which he had been sent from Hamburg.

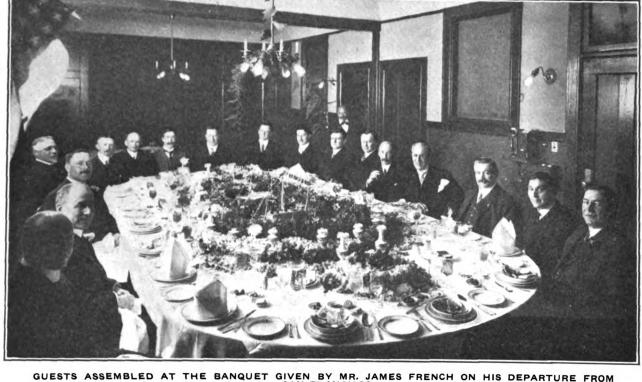
It is supposed that since the Hamburg-American and other big German steamship lines have covered the Pacific Coast field to ascertain trade conditions and what growth is prospective with the opening of the Panama Canal, that the shipbuilders are also beginning to take After covering the California ports Mr. Blohm will continue to South America and is to include in his report the likelihood of greater things in the West Coast territory.

EUROPEAN SERVICE FOR THE OSAKA SHOSEN KAISHA.

It is reported in the Kobe Chamber of Commerce Journal that the Osaka Shosen Kaisha has decided to start a service to European ports. A monthly service will be undertaken for the present, with nine new vessels, each of 10,000 tons, on the London-Yokohama route. For the necessary fund for the extension of the company's operations, an enlargement of the capital will, it is understood, be resorted to.

The Osaka Shosen Kaisha has placed an order with the Osaka Iron-foundry for the construction of two cargo steamers of 3,000 tons and one vessel of some 800 tons. The company also placed another order with the Kawasaki Shipbuilding Yard for four steamers to be placed on the Darien service. It is reported that the same company intends to construct two steamers, one of 10,000 tons and the other 9,000 tons, to be placed on the Panama line.





GUESTS ASSEMBLED AT THE BANQUET GIVEN BY MR. JAMES FRENCH ON HIS DEPARTURE FROM SAN FRANCISCO

Just prior to the departure of Mr. James French from San Francisco, he gave a delightful dinner to a number of the congenial friends he made during his stay in this city. The above photo was taken on this occasion and those who enjoyed Mr. French's hospitality were:

Reading from left to right-J. C. Rohlfs, who is associated with the Standard Oil Company; J. A. Mc-Gregor, President of the Union Iron Works Company; James French, the host; Louis Rosenthal, who is so well known in marine insurance circles of this city; W. H. Stewart, Lloyds surveyor at this port; H. P. Frear, associated with the Union Iron Works Company; J. W. Isherwood, who is the inventor of the Isherwood System of Ship Construction; J. J. Tynan and George A. Armes, also officials of the Union Iron Works Company; Walter A. Buck, with the Associated Oil Company; W. Chisholm, Superintendent of the Pacific Mail SS. Company; R. L. Hague, with the Standard Oil Company; John A. Bishop, Adjuster with Johnson and Higgins; Chauncey St. John, Broker; W. Owens, with the Oceanic Steamship Company; F. H. Evers, associated with the Hill-Hubbell Company, and Geo. M. Magruder, Superintending Engineer of the American-Hawaiian Steamship Company.

A most enjoyable evening was spent by all and many toasts were given, the following being one of the most applauded:

There's a couple of jolly fellows From over across the pond On a business trip Concerning a ship-Of Traveling they're fond.

When you want a noble sea-craft Constructed sound and good To cross o'er the sea-Just take it from me-J. W. Isherwood

Is the man to build it for you He'll treat you right and fair, It never will fail When it starts to sail For Isherwood is square.

J. French is always smiling, He has a happy way, His first initial May be official, But French is not a jay.

He's just a darned good fellow, Who's having one good time, He likes to be With you and me When we are feeling fine.

Then here's success to both of you-To French and Isherwood-May the future bring You everything Your friends all wish it would.

We are glad to learn that Mr. French, who was formerly Surveyor on the Great Lakes for Lloyd's Register, and who is now Supervisor of Plans in the United States, has been appointed Principal Surveyor for Glasgowthis is one of the highest positions in the Service. We know that the numerous friends of Mr. French in San Francisco will be very pleased to hear this good news. Mr. French is to take up his duties at Glasgow late this summer, and hopes to again visit the Pacific Coast before "crossing the pond."

http://www.hathitrust.org/access_use#pd-google

NEW INVENTION IN ELECTRIC SHIP'S TELEGRAPH.

An Electric Ship's Telegraph has been invented by Mr. Victor H. Street of San Francisco, which is similar in appearance to the regular mechanical ships telegraph at present in general use in steamships all over the world, but differs from the present system in the operating power, used for moving the indicator. The ship's telegraph now in general use is operated by endless wires, chains and sprocket wheels, requiring constant care and adjustments, and the indicator hands are moved by hand power.

This new invention in an Electric Ship's Telegraph, is operated by an electric current and the indicator hands are moved by electro magnets.

The operation of the device is as follows: The officer on the bridge moves the handle on the sender until the pointer on the handle is opposite the required signal. This movement connects an electric circuit between that signal and the corresponding signal on the instrument in the engine room; the electric current, passing through an electric magnet, causes the indicator hand on the receiving instrument to travel to the required signal. When the hand reaches the exact center of the signal the circuit is broken and the hand stops on the signal; the engineer on watch in the engine room immediately moves the handle on the receiving instrument with the pointer opposite the indicator hand, causing the indicator hand on the sending instrument on the bridge to move to the exact center of the signal given, thereby indicating to the officer in charge, that the signal has been seen and understood. Simultaneously with the movement of the hands on either the sending or receiving instrument two bells ring, one in the engine room and one on the bridge, and if the signal given to the engine room is not immediately answered by the engineer in charge a constant moving of the handle on the instrument on the bridge will cause a continual ringing of the bell in the engine room calling the engineer's attention to the signal. In this way a complete understanding of signals between the two stations is assured, and, as the indicator hand on the receiving instrument cannot stop at any signal, excepting the one given by the sending instrument, a misunderstanding of signals is absolutely impossible.

Mr. V. H. Street has also invented a recording device, which can be used in connection with his electric ship's telegraph.

This instrument, operated by a clock arrangement, registers electrically and correctly every signal given from the bridge to the engine room, giving the exact hour, minute and second the signal has been given and the elapsed time between signals. This instrument, connected with the bridge telegraph, can be placed in the captain's room, if so desired, and the paper tape, registering the signals, can be read, removed and replaced by new tape every day at noon; a note being made of this proceeding in the ship's log and the used tape placed on file.

This instrument, "Street's Electric Ship Telegraph Recorder," will undoubtedly fill a long felt want in the shipping world, and will enable the authorities to place the blame in the right place in cases of collisions and numerous accidents of daily occurrence, where frequently a dispute arises as to the signal given to the engine room from the bridge.

THE WIRELESS TELEPHONE IN JAPAN.

Wireless telephony has been put into practical use by the Japanese Department of Communications.

Various experiments having shown the device to be feasible and the Department is drawing up regulations to deal with wireless telephony. Wireless telephone apparatuses are being installed in the Toyo Kisen Kaisha's steamers "Tenyo," "Chiyo" and "Shinyo," the Nippon Yusen Kaisha's steamer "Bingo," and the Osaka Shosen Kaisha's steamer "Amakusa," and these steamship companies' offices in Kobe, and one office each in Yokohama, Moji and Nagasaki. The station in Yokohama will be in the premises of the Toyo Kisen Kaisha's office.

Communication was opened with the "Tenyo," which left Yokohama June 4, and proved a great success.

The Kobe Chamber of Commerce Journal has the following with reference to this subject:

'Messrs. Torigata, Yokoyama, and Kitamura are the inventors of the wireless telephone in Japan, and have been dispatched by the Department of Communications for the purpose of beginning the operations.

"Mr. Torigata says that in an open space, like that from the land to a ship at sea, the wireless telephone will operate over a distance of forty or fifty miles; and on land, where there are houses and other obstacles, the effective distance will be twenty or thirty miles.

'The device for receiving messages consists of a cross-shaped antenna constructed at a point 100 feet above the ground, and the receiver and mouthpiece attached to an apparatus, the construction of which is more complicated than that of the ordinary telephone apparatus. The apparatus was invented in February of last year, and its construction completed May 15. It is patented in England and France. One apparatus costs 300 yen. Of course, one apparatus is required at each end of a wireless telephone connection, but the apparatus will not operate unless an electric current is turned on it. On land, where accessible, a motor, costing 200 yen, might be attached to the apparatus. A current to light two electric lamps of 16 candle-power each will suffice to operate the wireless telephone apparatus. In places where there is no electric power available, a dry battery, costing 150 yen, might be used. In lighthouses, or on small ships, the battery would come handy. It must, however, be replaced once every year.

"No telephone bell can be attached to the wireless telephone apparatus, and consequently the operator has always to be listening. The inventors, however, hope to be able to construct a wireless megaphone, which would do the work of a bell, at a cost of 300 yen. It is often asked what kind of message would be received in an apparatus, when several persons are talking at the same time within a radius of 30 or 40 miles. The inventor says that even in such case, there will be no confusion of voices, because the apparatus is so constructed as to be able to receive only one message at a time. But different from the ordinary telephone, the wireless can not send a message at the same time that it receives

"Wireless telephone will be substituted with profit for wireless telegraph in such short distance communication. as between island or cross straits. It will minimize the occasion of shipping accidents due to fog, such accidents costing Japan from 700,000 to 1,000,000 yen a year. It will afford great facilities in communication between harbor and port, among vessels in naval manoeuvers, and in various other services. Airships carrying wireless telephone apparatus will probably revolutionize the military reconnoitering service.'

RECORD YEAR IN JAPANESE TRADE.

Japan's foreign trade in 1912 was greater by \$95,927,-439 than for the previous record year of 1911. From \$507,759,206 in 1911 the \$95,927,439 advance in 1912 brought the grand total up to \$603,686,645. These figures are for Japan proper, Taiwan (Formosa), and Chosen (Korea), but exclude the Kwantung leased territory, which serves largely as a gateway for Japanese industrial effort in Manchuria and the other northeastern Provinces of China. In 1912, therefore, Japan's

foreign commerce exceeded all previous records. When the 1912 percentages of trade of the various nations with Japan proper, not including Taiwan and Chosen, are compared with 1911, it is found that the most remarkable change is the advancement of the United States from 15.8 to 20.52 per cent. of imports, thus placing America second, next to British India, and reducing the United Kingdom to a position between the United States and China. While China has decreased its percentage of Japan's imports from 12 per cent. in 1911 to 8.85 per cent. in 1912, Japan during the same period has increased its exports to China from 19.7 in 1911 to 21.79 per cent. in 1912. Slight changes have resulted in the percentage of trade with other countries, aside from British India which, as a result of heavy cotton shipments to Japan during 1912, increased the 1911 record of 19.4 per cent. to 21.77 per cent. in 1912.

CRAMPS HAVE GOOD YEAR.

The Wm. Cramp & Son Ship and Engine Building Company of Philadelphia expects to make numerous improvements in its plant and for this purpose recently sold \$1,200,000 3-year 6 per cent. notes dated April 1, 1913; these notes being secured by \$2,000,000 of the company's 5 per cent. consolidated mortgage gold bonds of 1923. The net earnings by this company for the fiscal year ended April 30, 1913, were \$561,975, this being the largest since 1909 and 1910, when the net earnings exceeded \$700,000 per annum.

"CELTIC KING" ARRIVES AT VANCOUVER.

The British steamer "Celtic King," Capt. Richard Humphreys, on charter by the Maple Leaf Line, New York, arrived at Vancouver, B. C., on July 21, with a cargo of 4000 tons of sugar from Cuba consigned to the British Columbia Sugar Refinery Co. Ltd., and 2200 tons steel rails, etc., from New York, for Messrs. Evans, Coleman & Evans, Ltd.

The vessel had a run of bad weather coming up the west coast, and in addition to her regular bunkering ports, was obliged to call at San Francisco to replenish coal on the way up. This retarded her arrival a day or two.

The "Celtic King" will be followed by the S. S. "Santa Rosalia," which sailed from New York on July 13 for Buenaventura, Victoria, Vancouver and Prince Rupert.

S. S. "NEWPORT" TO BE REPAIRED.

The Pacific mail liner "Newport," which sank at Panama quite some time ago, is to be placed in service again. The "Newport" was raised and returned to San Francisco under her own steam. The vessel is to be repaired by the Union Iron Works Company at a cost of about \$250,000, including the conversion of the vessel into an oil burner.

PERUVIAN STEAMSHIP CO.

On May 23, 1912, the Peruvian Steamship Co.'s "Huallaga" arrived in Callao and was added to the fleet of the company, now consisting of five passenger and mail The "Huallaga," which was built in France, is fitted with reciprocating engines, burning oil. It is a 4,000-ton ship with a speed of 20 knots. The "Urubamba," "Pachitea," and "Mantaro" were changed from coal to oil burners in the course of the year, so that the Peruvian Line's ships are now all oil burners.

In November the Peruvian Line inaugurated a bimonthly service to Valparaiso, and only a few weeks before Guayaquil was resumed as a port of call. On December 30, 1912, Congress granted an additional subsidy of £15,000 (\$73,000) annually to the Peruvian Steamship Co. for 29 years. This is supplementary to the original subsidy of \$146,000 granted with the stipulation that two vessels and a dry dock were to be constructed. The line now has three more ships in service than it is required to have, all of which are constructed to serve as cruising transports in case of war, mounting four 4-inch guns.

The bank clearances of San Francisco, Los Angeles, Oakland, San Diego and Sacramento for the first half of this year amounted to \$2,147,601,508. This shows an increase of \$103,438,748 over the same period of 1912. Of this great sum of more than two billion dollars San Francisco cleared \$1,295,861,888, a gain over the previous year of more than fifteen and a half million dollars, but really a gain of much more than that, as in the figures of 1912 the same period included at least ten million dollars subtreasury drafts now drawn on Washington. The percentage of increase here is more than 11 per cent.

ANOTHER GOOD COMBINATION.

Harmonious agreement and co-operation on the part of the San Francisco Chamber of Commerce with the California Development Board has been assured by the election of Mr. Robert Newton Lynch, Vice-President and Manager of the Development Board, to the position also of Vice-President and Manager of the San Francisco Chamber of Commerce.

The Development Board maintains intact its membership, finances and state-wide activities, and by this new arrangement receives the hearty support of the work and policies of the city organization, thus facilitating the usefulness of each and avoiding danger of overlapping.

The arrangement for the common management of both institutions is a cordial recognition in San Francisco of the great and direct benefits which come to the city through the efficient work of the Development Board in building up the State. It also assures to the State the sympathy and help of San Francisco in all the efforts of interior organizations and marks an epoch in city and State co-operation for the development of the resources of the State.

NOT A SAFE PLACE.

"Did youse git anyting?" whispered the burglar on guard as his pal emerged from the window.

"Naw; de bloke wot lives here is a lawyer," replied the other in disgust.

"Dat's hard luck," said the first; "did youse lose anyt'ing?"



PROMINENT STEAMSHIP MAN IN OUR MIDST.

Mr. Louis E. Steinmann, of the firm of Steinmann & Co., Antwerp, arrived in San Francisco on July 22.

Mr. Steinmann is visiting this city in the interests of the proposed Belgium exhibit at the Panama-Pacific International Exposition, but will also look over the shipping situation, particularly as to the results expected with the opening of the Panama Canal.

The firm of Steinmann & Co., forwarding agents and steamship representatives, and which is one of the oldest in Antwerp, is at present representing five different steamship companies, three of which operate in the United States.

SS. "CITY OF SEATTLE" TO BE USED AS FERRY.

The SS. "City of Seattle" has been purchased from the Pacific Coast Steamship Company by the Martinez and Benicia Transportation and Ferry Co. This vessel, which had become so well known in the Alaska trade, is to be operated as a ferry boat between Benicia, Cal., and Martinez, and was recently towed to San Francisco for this purpose. We understand that the "City of Seattle" was sold for \$15,000.

MITSUI & CO. RECEIVE LARGE CONTRACT.

The Japanese firm, Mitsui Bussan Kaisha, has been awarded the contract for 80,000 tons of coal, aggregating in value over half a million dollars, to be used by the army of the Philippines during the fiscal year beginning July 1. The Mitsui bid was \$6.20 per ton for delivery ex-ship to Manila Bay, of approximately 20,000 tons of Miike washed nut coal, or Tagawa lump coal, and \$5.85 per ton for 60,000 tons Minejj best screened lump coal.

ANOTHER PALATIAL STEAMER FOR THE BER-MUDA SERVICE.

With the object of still further popularizing the beautiful Island of Bermuda with American holiday makers the Royal Mail Steam Packet Company have decided to place another palatial cruising yacht, the "Caribbean," on their Bermuda service in September next. The announcement is made by Sanderson & Son, the Company's New York agents.

The "Caribbean," which will take the place of the "Orotava," will represent the high-water mark in cruising steamers and will rank equal with, if not surpass, in popular favor the Company's now famous "Arcadian." Distinctive features of the "Caribbean," which will be for first-class passengers exclusively, with accommodation for 350, include an exceptionally large and hand-somely designed Dining Saloon, a large number of single and two-berthed rooms, spacious promenade decks, a glass-enclosed promenade deck and all the comforts and conveniences which mark a first-class ocean liner of the present day.

The registered tonnage of the "Caribbean" is about 6,000, her engines are of the latest type and she is fitted with wireless apparatus in charge of two operators.

Passengers by the "Caribbean" will find their every need thought out and provided for in the light of past experience.

The vessel will leave Southampton and Cherbourg on Sept. 2nd, next, for a cruise to New York via St. Michael's and Bermuda. She will arrive at New York on Sept. 14th and will at once take her place in the regular Bermuda service.

EMPLOYERS' LIABILITY.

From 204 Federal Reporter, 764.

THE NEW YORK.

(Circuit Court of Appeals, Second Circuit. April 14, 1913.)

1. Seamen (§ 29*)—Injuries—Ship's Liability.

Vessel owners are liable to injured seamen for wages, maintenance, and expenses of cure, except where the injury resulted from the seamen's own wilful misconduct, and also for indemnity for injuries resulting from unseaworthiness of the vessel or her equipment.

[Ed. Note.—For other cases, see Seamen, Cent. Dig. § 186, 188-194; Dec. Dig. § 29.*]

2. Seamen (§ 29*)—Injuries—Unseaworthiness of Vessel or Equipment.

Libelant was employed as an engine room cadet to keep the oil cups on certain pumps in the engine room filled with oil during his watch. He was shown the cups, but was not told where to stand. At first he undertook to fill the cups, standing in the passageway between the guards of two pumps, but could not see into the cup from this position. He saw another cadet standing on the bearing of the pump shaft, with one foot over a revolving shaft, while filling the cup, and afterwards followed his example until the time of the accident, three or four days after, when, while filling the cup, his overalls were caught by the set pins in a revolving shaft, and his leg was broken. The vessel was built by first-class builders in the usual way, and the safe place where libelant could have stood was not hidden or concealed, but was open and obvious, though less convenient. Held, that the vessel was not unseaworthy in structure or equipment, in not providing a more convenent place to stand, or for failure to box the shaft and wheel, and that she was therefore not liable to libelant for damages for his injury.

[Ed. Note.—For other cases, see Seamen, Cent. Dig. § 186, 188-194; Dec. Dig. § 29.*]

3. Seamen (§ 29*)—Injuries—Negligence of Fellow

Omission of libelant's superiors to tell him where to stand while filling the cup, or to warn him not to straddle the shaft, if negligence, was the negligence of libelant's fellow servants, for which the owners of the vessel were not liable.

[Ed. Note.—For other cases, see Seamen, Cent. Dig. § 186, 188-194; Dec. Dig. § 29.*]

This cause comes here upon appeal from a decree of the District Court, Southern District of New York, in favor of libelant for \$350 maintenance and cure and \$5,000 damages, with costs.

[Editor's Note.—The decision of the Appellate Court was that the award of \$350 for maintenance and cure should stand, but that the award for \$5,000 for damages should be overruled, apparently by reason of the factor of contributory negligence of a fellow servant.

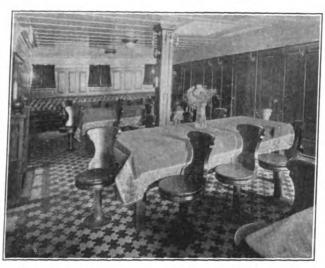
Under the Roseberry Act, governing employer's liability in California, it cannot be set up as a defense that death or injury has resulted from the absence of reasonable care by a fellow servant of the claimant, and in that respect is utterly devoid of reason. Evidently had the above quoted case come under the jurisdiction of the California courts the ship owner would have been mulcted for the entire award made by the trial court.

The defense of negligence on the part of fellow servants has been abolished by many States that have passed compensation laws in the past few years.]

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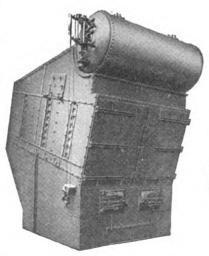
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A WELL-MERITED AWARD.

On July 11th the underwriters interested in the steam schooner "Avalon" presented the chief engineer, John Bryant, a gold watch and chain and also a check for \$500.00 for his successful, unaided efforts to extinguish a fire in the engine-room of that steamer.

It is well-settled in law that members of a crew are not entitled to salvage for services rendered to the vessel on which they are signed, except under most unusual circumstances. They may risk their lives and act most heroically, but the law, in its cold-blooded way, says that in doing this they are merely acting in the line of duty and are, in most instances, merely assisting in eventually saving their own lives, even while risking them. This provision of law is wise and cannot be too clearly impressed on seamen, for they are prone to overrate any extraordinary services they may render to their ship when in distress and to feel aggrieved that these services are not recognized in some substantial manner, and underwriters are not infrequently berated, in an impersonal way, for not "coming through."

On the part of the underwriters it must be said that when insuring a vessel they do so with the guarantee that it shall be properly manned, and that means that the crew must do everything in its power, even to risking life, to preserve the property. But underwriters are not slow to recognize and to reward any act of especial merit, and many seamen can testify to that. Substantial recognition in such cases is as much an honor to those participating as to the receiver, and it cheers others in the knowledge that gratitude can be found, even among marine underwriters, and incites in them the hope that at some time they too may be a recipient, not for an ordinary duty, even if performed in great danger, but for some really heroic act.

Such a case was that of the chief engineer of the While lying at San Pedro a fireman went below to start the fires under the furnaces and in some way set fire to some waste and to the oil, and as the fire-room and engine-room quickly filled with smoke he left his post. Engineer Bryant was standing on the deck, partially clad, but immediately went into the engine-room, and seeing the flames, procured all of the fire extinguishers on board, but they were soon exhausted. Other extinguishers were horrowed from a steamer lying alongside, but they were also used up without extinguishing the fire. The city fire alarm was turned in and a chemical engine responded, but the firemen refused to enter the engine-room, from which the smoke was then pouring in large volumes, and Engineer Bryant took the chemical hose alone and

again descended into the engine-room and finally succeeded in extinguishing the fire. In performing this service he was quite badly burned and otherwise injured and was compelled to remain in the hospital for several weeks.

This is one of the acts that underwriters will go out of their way to honor. In this case there were no lives in danger, and as the only loss would have been a property loss Engineer Bryant could not, and would not, have been subject to blame had he left the extinguishing of the fire to the members of the fire department, who would have worked at long range, with a resulting large property loss. Actuated, however, by the zeal of his profession he preferred to risk his life to save the property of others rather than to stand by and watch the destruction.

The presentation was made in the rooms of the Board of Marine Underwriters of San Francisco and Engineer Bryant may well feel proud of a duty nobly performed as well as of not so much the gift itself, but the spirit which prompted it.

The following companies had insurance on the steamer and participated in the award: Fireman's Fund Insurance Co., Aetna Insurance Co., Ocean Marine Ins. Co., London Assurance Corporation, Boston Insurance Co., Maritime Ins. Co., Ltd., Canton Insurance Office, Standard Marine Insurance Company, Union Marine Insurance Co., Ltd., and the British and Foreign Marine Insurance Co., Ltd.

MARINE MISHAPS.

"ALBION," steam-schooner. From Seattle, July 5th. Broke her tail shaft while passing through the Straits and was towed back to Seattle for repairs.

"CASCO," Str. From Redondo, June 26th, for San Francisco. Struck a rock off San Simeon on June 27th and was beached. Latest advices indicated that vessel was breaking up and would probably be a total loss. Inquiry by the Local Inspectors as to the cause of the accident developed that the master was negligent in navigation and his license was suspended for one year.

"CURACAO," Str. Before reported ashore on Prince of Wales Island. Negotiations are pending for salvage contract on the "no cure, no pay" basis, failing which the vessel and cargo will be sold as they lie.

"DOLPHIN." Str. From Scattle for ports in Alaska. Went ashore in Alert Bay on June 29th, but was later floated with the assistance of a tug. As the steamer was leaking badly she returned to Scattle, where the cargo was discharged and the vessel placed in dry dock. Estimated cost of repairs, \$12,000. The cargo was taken to destination by the steamer "Jefferson" of the same line.



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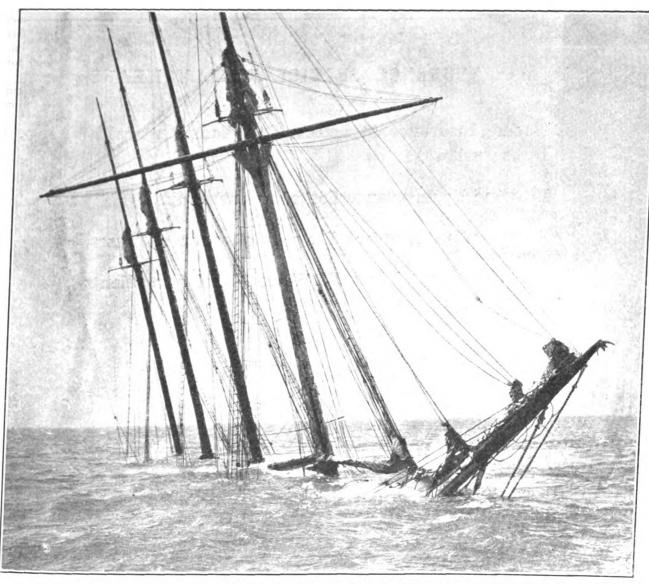
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SCHOONER "J. H. LUNSMANN" AFTER COLLISION WITH THE STEAMER "FRANCIS J. LEGGETT"

"FRANCIS H. LEGGETT," Str. From San Francisco, July 12th, for Portland. Was in collision at 1 a.m. on the 13th with the Schr. J. H. Lunsmann at anchor off Black Point, and was considerably damaged. She returned to port for repairs, which it is estimated will cost about \$8,000.

The Local Inspectors are investigating as to the cause of the collision and ascertained that the steam leading to the steam steering gear had been turned off for some

reason by the second engineer and the steamer failed to answer her helm in time to avoid the collision.

"HERAKLES," Nor. Str. From Sydney, C. B., April 21st, with 7,000 tons of steel rails for Pt. Mann, B. C. Went ashore on the Fraser River bar on July 15th, but was floated on the 18th, after discharging about 600 tons of her cargo. Extent of damage, if any, not yet known.

"J. H. Lunsmann," Schr. From Newcastle, April 12th, with a cargo of coal. While lying at anchor off Black



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Point, San Francisco, was run into on the morning of July 12th by the Str. "Francis H. Leggett," outward bound, and was sunk. Efforts are now being made by the Whitelaw Wrecking Co. to raise her.

"Jeanie," Str. From Seattle, July 13th, for Alaska. Grounded on Starr Rock, off Bellingham harbor, but was later floated, apparently undamaged.

"Santa Ana," Str. From Seattle, July 6th, for ports in Alaska. Grounded on a reef off Bellingham, but was later floated. As the steamer was leaking badly she returned to Seattle and was placed in dry dock, where considerable damage was found, the estimated cost of repairs being \$10,000.

MOTOR BOAT INSURANCE.

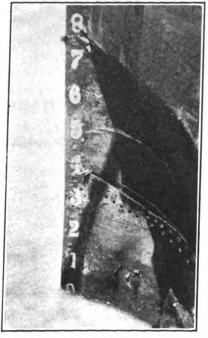
The rapid increase in the use of motor boats, both for pleasure and for commercial purposes, has opened up a new field for marine underwriters, and while this branch of the business is still in the experimental stage yet a well defined course is now being pursued, although sufficient time has not yet elapsed to allow for preparation of statistics on which to base an average of loss, a basis on which all marine rates are, or should be, governed. As in all new things some start has to be made and future action must depend on results. In all problems the question is to find the unknown quantity or "x", and in motor boat insurance "x" seems to stand for the efficiency of the operator.

Crafts propelled by steam power are compelled to carry licensed engineers familiar with steam pressure, gauges, cut-offs, and in general to be familiar with the mechanism which runs the boat. In motor boats it is different for there is no steam pressure to watch, no boilers to be supplied with the proper amount of water and no fires to be kept with the proper amount of heat to develop the proper amount of steam without waste of fuel. In some motor boats the entire crew is composed of one man, like the sole survivor of the Brig "Nancy," whose boast, after devouring the other member of the crew was.

"Oh, I am a cook and a captain bold, And the mate of the 'Nancy' brig, And a bo'sun tight, and a midshipmite, And the crew of the captain's gig!"

Once the spark is generated that ignites the gas the ignition is automatic and the only duty is then to steer the boat, and, if necessary, to pull a lever that at once shuts off the power. In case of a break-down not one operator in ten will know enough of the mechanism of the motors to relieve the difficulty, and in cases of emergency requiring skilful handling very few of the operators will be able to rise to the emergency and some damage, either to the boat itself or to some other boat, results.

Notwithstanding these conditions underwriters are now



SHOWING GREAT GASH IN BOW OF THE SCHOONER
"J. H. LUNSMANN" AFTER COLLISION

issuing very liberal policies on pleasure craft, propelled by the ignition of gas. The rate of premium for an annual policy is 5% and for this small premium underwriters will pay any loss occasioned by perils insured against, which comprise what are known as "perils of the sea" and include losses occasioned by unskilful handling, if amounting to \$25.00 on crafts valued in the policy at less than \$2,500.00 or 1% of the insured value if over \$2,500.00. The policy also includes what is known in marine parlance as the "Inchmaree" clause, that is it covers loss occasioned by negligence, breakage of shafts, or loss through any latent defect. In case the craft insured should be unfortunate enough to damage another craft by collision and is found to be at fault for the collision and the owner thereof must pay to the owner of the damaged boat for the damages inflicted, the policy of the insurance will reimburse him for the full amount so paid.

As most of the pleasure crafts are operated in bays, harbors and their estuaries, where dangers to small boats, unskilfully handled are numerous, it would seem as if the business would not be particularly desirable, yet from various reports it is ascertained that even at the rates obtained it is fairly profitable. Although full returns are not available a fairly good estimate of the premiums paid for insurance of pleasure motor boats on this Coast will average \$4,000.00 a month, at the present time.

With commercial motor boats the situation is prac-

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tically the same, so far as conditions of insurance are concerned, but the fates are materially higher, depending on the trade of the boat insured. And in this class of business the results, from an underwriting standpoint, have not been so satisfactory. As the installation of motor power in small boats, particularly in those engaged in fishing, is rapidly increasing, underwriters will soon be in a position to govern the rates by their experience and will be able to readjust them and the conditions of the policies to an equality.

A dominant factor in all marine insurance is the personnel of the officers and the efficiency of the crew. and with the system of license obtaining in the appointment of officers and engineers of steam vessels underwriters are relieved of the necessity of individual investigation and are fairly well assured of competency in the crew. Motor boats of over 15 tons, carrying passengers, are under the regulations of the law so far as certain equipment is concerned, but the "x" is still unregulated.

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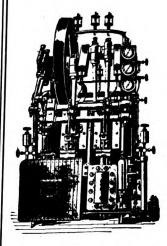
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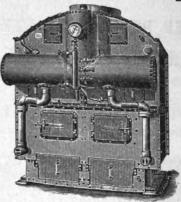
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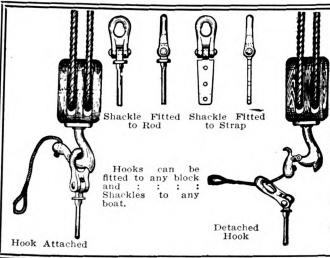
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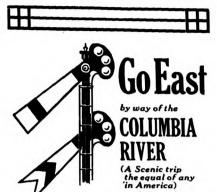
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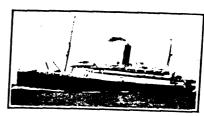
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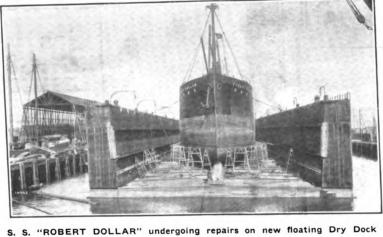
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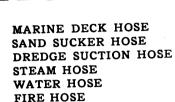
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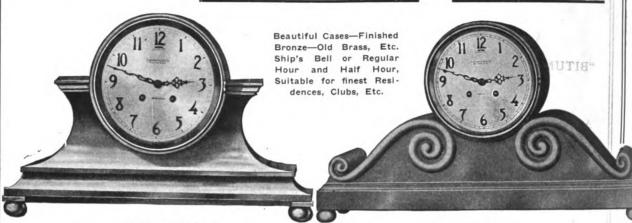
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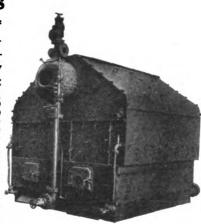
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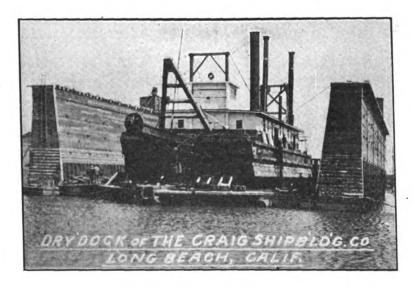
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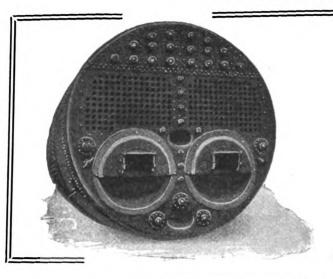
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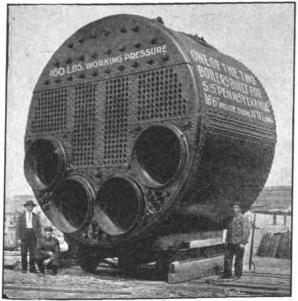
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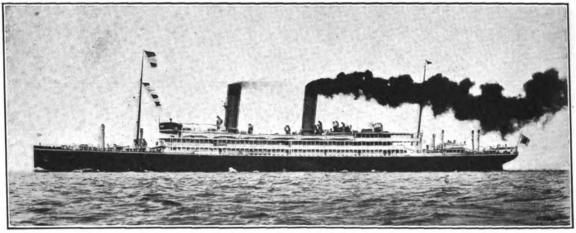
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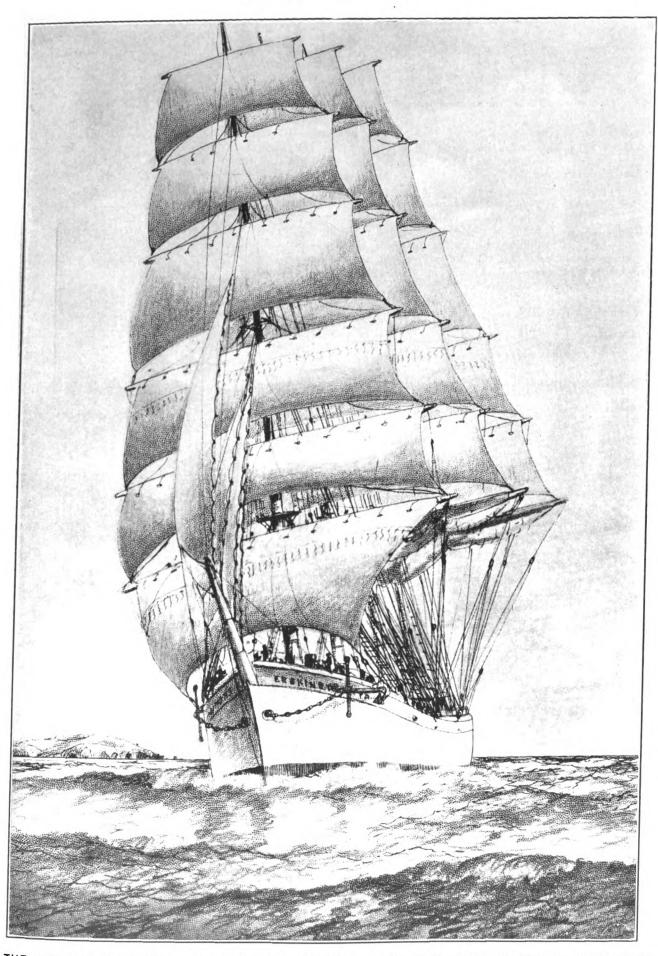
WM. H. AVERY,

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Fourth Floor Merchants National Bank Building, 625 Market Street, San Francisco



THE "ERSKINE M. PHELPS," WHICH HAS BEEN CONVERTED INTO AN OIL-CARRYING BARQUE. DESCRIPTION OF THIS VESSEL APPEARS ON PAGE 10.

THE "ERSKINE M. PHELPS"

The four-mast barque "Erskine M. Phelps" was built in 1898 at Bath, Maine, by A. Sewall & Company. For many years she was successfully operated in the ocean-carrying trade and achieved by her fine average performances the reputation of being an able carrier and a fast vessel.

Early in 1913, she was purchased by the Union Oil Company for conversion into a tow barge. It was originally intended to send down the yards, topmasts and topgallant masts and use this splendid vessel as a barge. After carefully considering the matter, it was decided, in view of her good average as a sailer, to keep her with her old rig and convert her into an oil-carrying barque in the run from Port San Luis, the loading station for the Union Oil Co.'s ships, to the Sandwich Islands, in the hope that she would be able to make about ten round trips per year under her own sail, and thus relieve one of the large steamers delivering oil to the Islands.

The "Erskine M. Phelps" is a four-mast skysail yard barque, of about 3000 tons gross register, 312' 0" long, 45' 0" breadth of beam, and 28' 0" molded depth. Her masts are very lofty and her yards very long. Contrary to the usual conditions prevailing on sailing vessels, her stability, light, was sufficient to allow of her being handled in port without ballast. This feature caused some uneasiness as to her stability when carrying an oil cargo, as it was thought she would be too stiff and therefore severe on her rigging. To allay all fears on this subject, she was heeled before work was begun on converting her into an oil-carrying barque. The continuous expansion trunks were made very wide, so as to leave a great free surface on the oil cargo to ease the rolling of the vessel.

Plans and specifications were drawn up in the Marine Department of the Union Oil Company for the conversion of the "Erskine M. Phelps," and the contract was given to the Union Iron Works Company, the lowest bidder, on March 1, 1913. The Union Iron Works contracted to complete the work of conversion by July 9th. The work was carried out with the greatest speed compatible with good workmanship, and completed twenty working days ahead of the agreed and stipulated date of delivery. The contractors secured a bonus of \$2000 on account of the early delivery of the vessel.

The rig and general arrangement of the "Erskine M. Phelps" were not disturbed, except in so far as was necessary in connection with the tanking of the ship. Seven steel athwartships oil-tight bulkheads and one longitudinal bulkhead, at center line, were fitted, dividing her hold into six double tanks. An expansion trunk was fitted in the 'tween decks, with oil-tight trunks extending up through the main deck from each tank. frames were cut and bracketed at the lower deck. The scantlings were kept up to the highest standard of the American Bureau of Shipping. The riveting and plating of the oil-tight bulkheads, expansion trunk, deck, etc., were most skilfully and conscientiously done, so that very few leaks developed under the hydrostatic tests of the bulkheads, which were very severe. The tank work was a great credit to the firm and workmen who executed it. The total capacity of the tanks, as completed, was 28,500 barrels.

The pumping and machinery outfit is very complete and ample in every way for a vessel of this type in the oil trade. Two single furnace Scotch boilers, 8' 6" in diameter, and 10' 6" long, were installed in the 'tween decks, immediately forward of the break of the poop. The old donkey boiler of the ship was overhauled and

connected to the steam lines throughout the ship. A condenser, with combined air and circulating pump under was fitted in the boiler-room. The boilers were fitted to burn oil with the "Dahl" System, as successfully developed by the Union Iron Works Co. The oil fuel burning system was also installed for the donkey The main cargo pump is a Worthington Duplex Outside Packed Piston Pump, 14" x 18" x 20", drawing from a ten-inch suction line, with connections to each tank and to the forehold. This pump was placed in the after hold with the bilge pump. The discharge line was an eight-inch pipe with reducers for connecting six-inch hose. To keep the deck clear for working ship, the discharge line was run fore and aft through the tanks, with risers forward, amidships, and aft.

The oil fuel for ship's use is carried in a large rectangular tank, built into the square of the main hatch and standing about six feet above the main deck. This tank holds 210 barrels. The fuel consumption, with the system of oil burning adopted, was found upon trial to be very low. The whole system of fuel piping, pumping and spraying was found to work very steadily and economically.

Owing to conditions at her loading and discharging ports, it was necessary to add to the mooring facilities on the "Erskine M. Phelps," and nine large, heavy fourteen-inch bollards were securely bolted to her decks.

In addition to the accommodation that had been always on the ship for her crew, a large house was built over one of the old cargo hatches and fitted up to serve the double purpose of messroom and smoking-room for the seamen. The galley was overhauled and a new and larger range put in. The midships house was refitted for the accommodation of the engineers and petty officers, and the deck officers were berthed aft, in the poop.

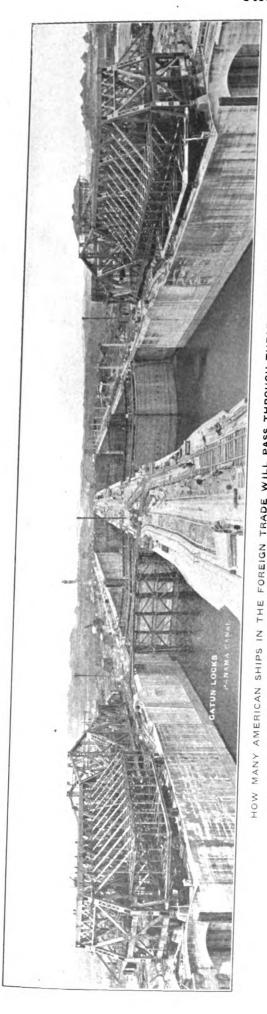
One of the spare rooms in the poop was fitted out as a "wireless" room and the Marconi System installed. The aerial was led from the main mast past the mizzen to the jigger and thence down the back stays to the wireless room. The installation has been in continuous use since the "Erskine M. Phelps" went into commission, and has given no trouble.

All the sails were overhauled and renewed, as necessary, by Messrs. Haviside, Withers & Davis of San Francisco. The rigging was renewed, as necessary, and all the gear put in first-class order. The anchors, chains and windlass were overhauled and put in first-class shape. All the pumping machinery in use in the original ship was gone over and, when necessary, renewed. The old ship's pumps, at the main mast, were discarded. The old fresh-water tanks were moved aft and reinstalled near the boilers.

The "Erskine M. Phelps" was thoroughly tried out at sea, under tow, making three trips to Oleum, the Union Oil Company's refinery on San Francisco Bay, with full cargo of oil from Port San Luis. As everything worked well and the vessel's behavior at sea was satisfactory, she was sent, under her own sail, to Honolulu, where she arrived in fourteen days and delivered about 28,500 barrels of oil and is now on her voyage home, in ballast. It is not possible at this time to say what her average time will be for a round trip, but her first voyage, under adverse conditions, has been very satisfactory for the trip out loaded, and it is hoped that she will make at least ten voyages per year and prove that a sailing vessel may still be profitable on this route.



WILL PASS THROUGH THESE LOCKS DURING



GATUN LOCKS OF THE PANAMA CANAL

At the present time there is no indication that any American ships operating in the foreign trade will pass through these locks, either now or in the dim future. Why?

Because the few American ships remaining in the foreign trade were barred from the use of the Canal because a railroad in the United States owned part of their stock.

Why have these particular ships been discriminated against? Surely it could not be on the ground that they might create an unfair competition between privately owned ships, for it was proposed that these ships be put under the jurisdiction of the Interstate Commerce Commission. This, however, was rejected, for the reason that the Interstate Commerce Commission did not have time to attend to such matters. Was it not possible that some other experts could have been employed to give this subject attention? The Government could then have had these ships for commercial purposes in time of peace and for most useful adjuncts to their naval necessities in time of war.

Further, the passage of the celebrated Canal Bill not only deprived American ships in the foreign trade from going through the Canal, but prevented the building of new ships with American material and by American workmen, and also was a direct slap at our most sacred treaty obligations, that the President of the United States should have the right, at any time, to prohibit any railroad owned or controlled ships passing through the Canal, provided such ship or ships were being operated in a manner detrimental to public policy.

Could anything be more sweeping than this to prevent unjust and unfair competition?

As a matter of fact, does any citizen of the United States, or any member of Congress, know of any railroad company that had any desire to build ships and operate them through the Canal in competition with itself? If so, this paper would like to know the name of that railroad. After a long investigation it has failed to discover any such contemplated action on the part of any American railroad, either transcontinental or otherwise.

Mr. American Citizen, do you realize that your foreign commerce for the fiscal year ending June 30, 1912, totaled in value \$3,857,587,344, of which \$3,431,470,423 was carried by sea and of which American vessels carried less than 10 per cent.-imports and exports of a value of but \$323,451,565—leaving to foreign vessels the carrying of over 90 per cent., of a value of \$3,109,018,858, and that your Government has expended for the building of this Canal some 450 million good American dollars?

For what purpose?

That the charity of this splendid nation to foreign steamship interests may go on, increase and multiply, and that all good American citizens can sit down with the calm belief that never for them will charity begin at home.

Senor Carlos F. DeBerna, general agent on the Pacific Coast for the Peruvian Steamship and Floating Dock Company of Callao, Peru, visited Victoria, B. C., last month to make inquiries as to the feasibility of a proposed new line of steamships. He believes that the coast trade could be developed to a much greater extent than at present and says that there are markets for many British Columbia and other Pacific Coast products in the cities of South America.

BOLINDERS' MARINE ENGINES

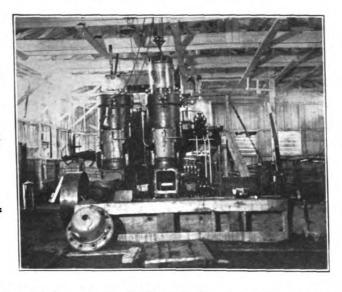
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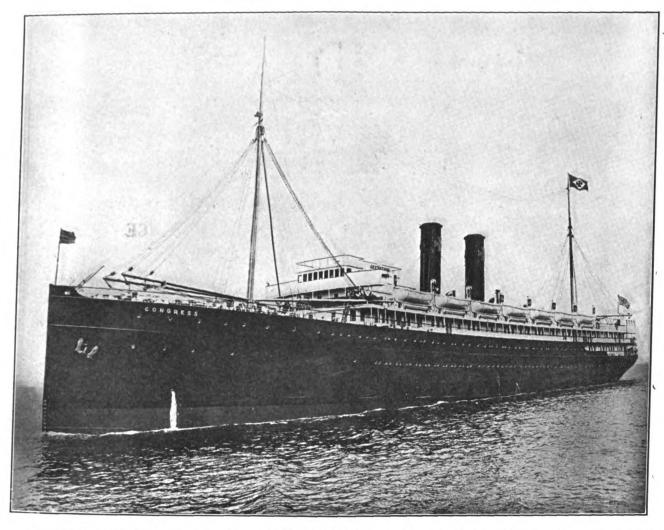
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160-HORSEPOWER ENGINE NOW BEING DEMONSTRATED BY

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SAN FRANCISCO



The new \$1,250,000 liner "Congress," just completed at Philadelphia for the Pacific Coast Steamship Company, is now on her voyage to the Pacific Coast, being one of the last steamers that will make the long trip around South America before the completion of the Panama Canal. This vessel is to ply between San Diego, Los Angeles, San Francisco and Seattle, making her first trip in this service, under command of the well-known and greatly liked Captain N. E. Cousins, sometime before October 1. A detailed description of this vessel appeared in our June issue.

We wish the S. S. "Congress" and her commander every success and know that this new addition to the Pacific Coast Steamship Company's fleet will be most popular with the traveling public.

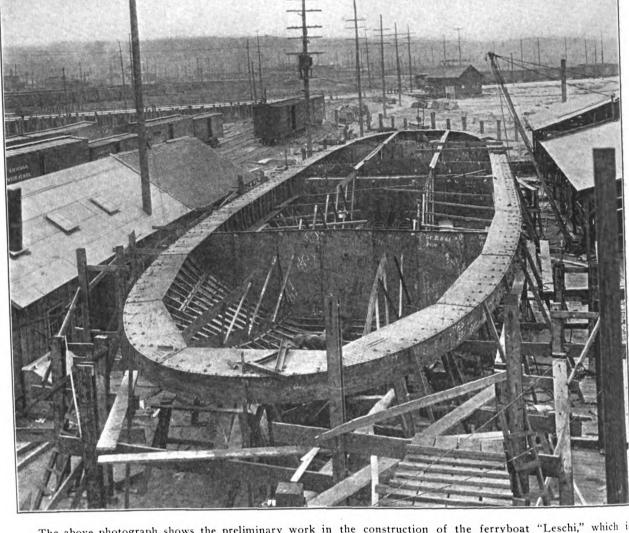
ONE HUNDRED NEW OIL TANK STEAMERS SAID TO BE ORDERED

With the opening of the Panama Canal, says Mr. Edgar D. Pouch, of Pouch & Co., New York, specialists in oil stocks and who is regarded as an authority on developments in the oil fields, the Standard Oil Company of California will undoubtedly broaden its markets, but it may also have to meet considerable competition. It has had, nevertheless, several years' advantage over new competitors, for it now has a valuable supply of oil on hand of about 20,000,000 barrels, which is the largest single accumulation next to the Prairie Oil Company's stock in the United States.

The plans for the extension of business in the foreign fields by the various American companies are very large and comprehensive, which also places in the hands of these companies a weapon that the Dutch-Shell group cannot afford to overlook.

The enormous demand for petroleum products that appeared a year and a half ago has been worldwide and some predict that 1914 will be as profitable as 1913 and 1912. The foreign shipping rates for oil carrying tank steamers reflect for example the activity in the export field. Furthermore, it is stated that one hundred new tank steamers have been ordered by various transportation companies for delivery in 1913 and 1914, some of which will, of course, be used in the Panama trade carrying some of the surplus California oil, as well as Mexican oil to European ports.

When Mexico again becomes safe for the well drillers to return to the Tampico section great quantities of oil should be produced by several of the American as well as foreign companies who already have large investments there. The pressing need is for pipe line and transportation accommodations to handle the present enormous production. All this construction work is practically held up until some change for the better comes in the government situation.



The above photograph shows the preliminary work in the construction of the ferryboat "Leschi," which is to be operated by the Seattle Port Commission on Lake Washington.

A detailed description of this vessel appeared in the August issue of the Pacific Marine Review. Shipping men of Seattle are particularly interested in the successful completion of the "Leschi," as she will be practically built twice before being launched on Lake Washington.

The scene above shows the work done at the shipyards of J. F. Duthie & Company, Seattle. On August 4 the last bolts were fixed in the framework and hull at the Duthie yards, and on August 6 the "Leschi" was taken to pieces and shipped to a point on Lake Washington, where all was in readiness to start the rebuilding. Already plans for an elaborate ceremony at the launching of the "Leschi" have been discussed, although the

arrangements will not take definite shape for several weeks.

Though the work has progressed very quickly, a delay of several weeks was met with in getting the first steel from the East. Even with this delay only two and one-half months have elapsed since the contract was let by the Port Commission. The contract time for completion is January 5.

which is to cost \$85,000, is 169 feet long and 53 feet in beam over the guards. She will be equipped with Ballin watertube boilers and sternwheel inclined reversible type of engines of 750 horse-power, which will give her a speed of fourteen miles an hour.

SHIP'S RUDDER WITH A DOORWAY.

The new Cunard liner "Aquitania," which is about the same size as the "Imperator," is provided with a novel feature in her balanced rudder. This consists of a doorway leading to the interior of the rudder, which is of sufficient size to admit workmen at any time it should become necessary to remove the pin which connects the rudder to the ship. According to the "Shipping World," this pin is four feet in length and is larger than the heaviest projectile made for modern artillery.

TOWING LAUNCH AND BARGES TO BE BUILT.

We understand that Henry Peterson, who does a large part of the towing and lighterage business of San Francisco Bay, has placed an order with Messrs. Kruse & Banks, of Coos Bay, Ore., for the construction of a towing launch and four barges. The launch will be equipped with a 100-h.p. gasoline engine, while the barges will be built to carry from 250 to 400 tons each

The port of San Francisco has a new Collector of Customs in J. O. Davis, who has succeeded F. S. Strat-

TWO VESSELS BUILDING IN SCOTLAND FOR THE CANADIAN PACIFIC RY. COMPANY.

The Canadian Pacific Railway Company has contracted with the firm of Messrs. William Denny & Brothers, of Dumbarton, the famous builders of fast channel steamers, to build two vessels for service between Vancouver. Seattle and Victoria, covering the well known triangular route of this company.

The vessels are to be built to the British corporation's highest class for awning deck steamers, with freeboard. They are to have cruiser sterns, and will be 395 feet in length over all, 54 feet in breadth, and 28 feet in depth to the awning deck.

They will have five decks, viz., boat, promenade, awning, main and orlop, with deck house on the boat deck. The vessels will be fitted to burn oil fuel and will have double bottoms.

There will be thirteen transverse bulkheads to the main deck, and two longitudinal bulkheads at sides of boiler space, with four large oil tanks on each side. There will be two watertight bulkheads from the main to the awning decks, and the general design is such that if any two compartments are open to the sea when the ship is fully loaded, she will still remain afloat.

The general arrangement will be similar to the "Princess Charlotte," and other coast steamers of the company. All of the decks, with the exception of the boat deck, will be of continuous steel. There will be sixteen seamless life boats and one working boat, and the general equipment will comply with Canadian regulations for carrying 2000 passengers in the coasting service.

The public rooms will be finished in hardwood and furnished in a luxurious manner. Sleeping accommodations will be provided for about 440 first-class passengers, with numerous cabins de luxe, bath rooms, etc. The smoking room will be on the boat deck and the verandah cafe will also be a feature. The dining room which will be on the main deck aft will seat about 175 people. Arrangements will be made for tables of various sizes and Utley's patent 21-inch semi-elliptical port lights will be adopted.

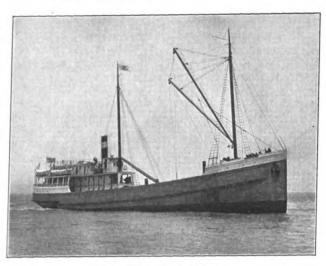
The galleys and pantries will be fitted with all the latest appliances, ample provision being made for ventilation.

A refrigerating plant will be installed sufficient to take care of the ship's stores.

The ships will be steered by Brown's telemotor steam steering gear, the rudder being of the spade type and balanced. The motive power will consist of ten Babcock and Wilcox boilers arranged for forced draught on the closed stoke-hold system. There will be three stoke holds and three funnels. Geared turbines of Parsons' very latest type, arranged with cruising stages, in order to effect the greatest economy while running at 17 knots per hour, will be used for driving the ships. Impulse wheels will be used on the go-astern turbines, and the aggregate horsepower will be in the neighborhood of 13,500.

The speed guaranteed is twenty-two and one-half knots an hour.

The vessels are to be delivered in the winter of 1914, and it is the company's intention to place them in service in the spring of 1915.



STEAMER "MERCED"

The steamer "Merced" owned by Chas. R. McCormick & Company, who operate a fleet of combined lumber and passenger vessels between Los Angeles, San Francisco and North Pacific Coast ports, arrived at Los Angeles August 28 on her maiden trip southbound. The "Merced," which was built at St. Helens, Ore., is the second of two \$350,000 steamers built by Charles R. McCormick & Company this year. These vessels have a lumber-carrying capacity of 1,000,000 feet and passenger accommodations for sixty-five persons.

SEATTLE YARD BUSY.

The Seattle Construction and Drydock Company are building for the United States Government the dredge "Col. P. S. Michie," two submarine torpedo boats, a submarine tender, called the "Bushnell," three steel seagoing tugboats and nine steel coal barges.

They are also building one nine-car freight barge for the Great Northern Steamship Company, a palatial steam yacht for D. C. Jackling, Salt Lake City, Utah, which will be ready to take the water within several weeks and two submarine torpedo boats for the Chilean Government.

The steam schooner "Wilmington," owned by the Chas. Nelson Company of San Francisco, and which has just been completed at the yards of Kruse & Banks, North Bend, Oregon, differs from the former type of wood steam schooners in that the boilers are placed on the deck aft of the engines which does away with the long house and alley way and makes better stowage for carrying the deck load. The "Wilmington," which is 210 feet over all, 42 feet beam and has a depth of 15 feet, will carry about one million feet of lumber.

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"ASK ANY OPERATOR"

IN USE BY ARMIES AND NAVIES, MERCHANT VESSELS AND PRIVATE YACHTS ALL OVER THE WORLD

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MOTOR-BOAT "VAQUERO" NOW IN SERVICE.

The "Vaquero," owned by Messrs. Vail and Vickers, of Los Angeles, is built of Oregon pine, much after the style of a small steam schooner. Her length is 130 feet, with a molded depth of 12 feet; her draft is 10 feet 6 inches, tonnage, 231 gross.

Intended principally for carrying cattle, all arrangements on deck, as well as in forward hold, have been made with this purpose in view, and removable pens to hold about ten carloads of grown cattle are arranged on deck as well as in the hold. There are three ventilators leading to fore hold in which are also several large electric fans to supply plenty of fresh air. The main hatch is 8 feet by 14 feet, with the large dimension thwartship, so the cattle can go right from dock to hold.

There are three water-tight steel bulkheads, one forward, and one on each end of engine-room; these bulkheads comply with the United States inspection laws.

The crew's quarters are located as follows: Engineer's and mate's rooms, on main deck, aft of engine-house; the forecastle is provided with eight berths; the captain's room, dining-room, galley, as well as two state rooms for owners, are located on upper deck; a companion way aft leads to rooms in aft end of ship.

Her main engine consists of a 250 horse-power, four-cylinder Union of the open cross-head type. In the lower engine-room are also located two fuel tanks holding 4200 gallons and a water tank holding 1900 gallons. The upper engine-room has an eight horse-power, double-cylinder Union engine, driving on one side a four-kilowatt Crocker-Wheeler generator and on the other side 4 by 4 Deane triplex fire and bilge pump. All are on the same bedplate. The exhaust of both the main as well as the auxiliary engines connected with mufflers

runs into a forty-eight-inch stack. A sixteen horsepower Union hoist, connected by messenger chain to a Providence pump break windlass, is located on forecastle deck. This hoist is also used for handling cargo.

When not in use in carrying cattle, this vessel is to



MOTOR-BOAT "VAQUERO."

be operated as a freight vessel carrying general freight on the lower coast. On her trial trip, in the Santa Barbara Channel, the main engine worked very satisfactorily, as did also the auxiliary machinery. The generating set furnished ample power for all fans and lights throughout the ship, giving at the same time a remarkably steady and clear light. The "Vaquero" is now in commission carrying cattle from Santa Rosa Island to San Pedro.

Ninety Tons of Biturine Used; also \$205,000 Saved



Is the Mare Island record of U. S. Collier "Jupiter."

Experts { to Apply Biturine Enamel. to Instruct When You Buy.

Mr. Owner:—You need us right now. Why? To save money.

We can show immediate saving and are prepared to do so.

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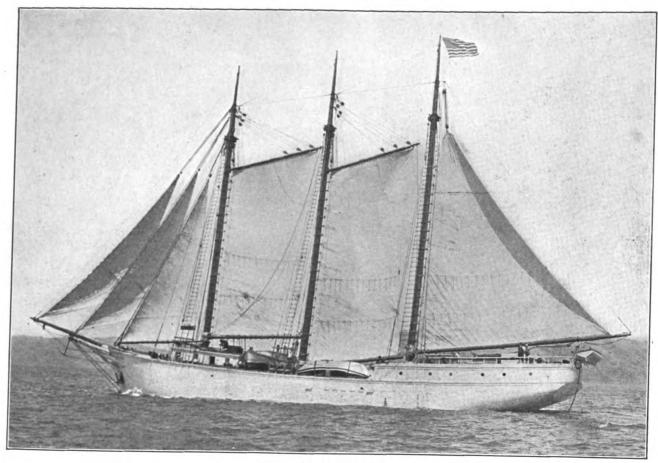
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AGENCIES THROUGHOUT THE WORLD



THE "GOLDEN STATE."

THE MOTOR-DRIVEN "GOLDEN STATE"

The "Golden State," being the largest motor-driven fishing vessel ever built on the Pacific Coast, is of general interest to the shipping world and to the fishing industry in particular. She is owned by the Union Fish Company, which for many years has been operating a large fleet of fishing vessels in Alaska and also between Alaska and San Francisco.

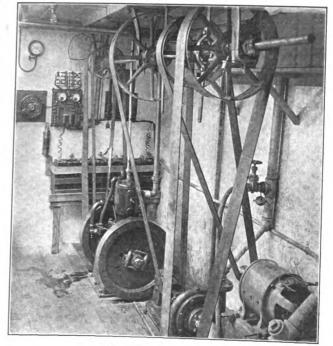
This company is gradually equipping all of its boats and vessels with internal combustion engines to take the place of those propelled by sail alone, as in the old days of the business. The need for prompt and reliable service, and the dangers and disasters of the past along the rocky coast of Alaska, made this change almost imperative.

The "Golden State" was built by Frank Stone, at the yards of the Union Gas Engine Company, on the Oakland Estuary, San Francisco Bay, and was launched the latter part of June of this year. She has a length of 145 feet, a breadth of 32 feet, and a depth of 11.6 feet, and in addition to her Union engines is fully rigged as a three-masted, ball-headed schooner. The "Golden State" has a carrying capacity of something more than 500 tons.

The hull is of extremely substantial construction throughout, and no expense has been spared to make this vessel fit for the most severe storms that she might encounter.

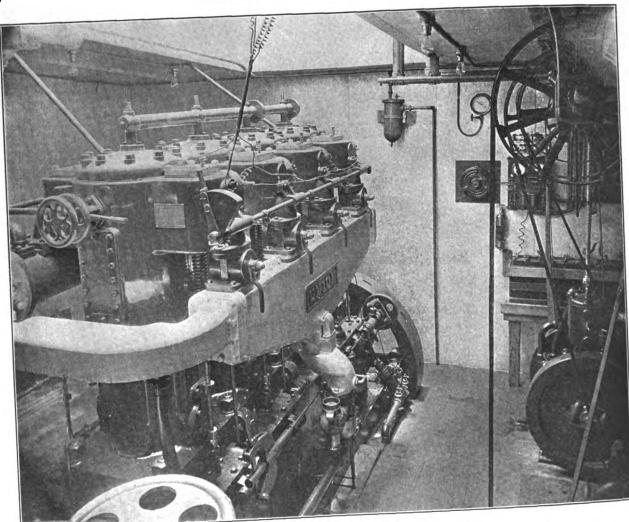
The engine-room is entirely separate from the hold, and is exceptionally light and roomy.

The quarters provided for the captain, engineer, and crew are more spacious than is generally found in a vessel of this type, and the general arrangement of bath room, staterooms and mess is exceedingly convenient.



VIEW OF ENGINE-ROOM.

The propelling machinery consists of a 150 H. P. four-cylinder distillate engine of the open cross-head type, built and installed by the Union Gas Engine Company. The engine runs at a normal speed of 300 R. P. M., and when tested on the brake it developed considerably more than its rated power. It is connected to



ENGINE ROOM OF "GOLDEN STATE"

a two-bladed propeller through a disc clutch and spur gear type of reverse. The two-bladed propeller is used in order that the blades may be placed in a vertical position when the sails are being used, and in this way the drag of an idle propeller is eliminated. One of the most distinctive features is the exhaust heated inlet manifold which enables the engine to be handled at slow speeds with the ease characteristic of a steam installation. Starting is accomplished by means of compressed air, greatly facilitating this operation.

On her trial trip the "Golden State" was sent over the

Government mile course, and developed a speed of seven miles per hour, which, considering her size, is a most creditable showing.

There is also installed in this vessel a complete electric lighting plant, with dynamo, two sets of bilge pumps, and a force or fire pump, all running off a counter-shaft which is, in turn, run either from the main engine or, when that is not running, driven by a Union 4 H. P. single cylinder engine installed in the engine-room and which easily handles any or all of the pumps and dynamo without necessitating the starting up of the big engine for these purposes.

CONTRACT FOR BATTLESHIP NO. 39 AWARDED

Battleship number 39, authorized at the last session of Congress, is to be constructed at the New York Navy Yard. This vessel is in essential particulars a duplicate of the U. S. S. "Pennsylvania," which was recently laid down by the Newport News Shipbuilding and Dry Dock Co. These two battleships are the largest yet laid down for any of the great navies of the world, and will have the following dimensions and characteristics:

	600	ft.
Length on designer's waterline	608	ft.
Length over all	ft. 1/2	in.
Length over all	ft. 10	in.
Breadth		

Sille No. 39 HWILL	31400 tons
Displacement	21 knots
Displacement	

Battery:

Twelve 14-inch guns.

Four submerged torpedo tubes.

Twenty-two 5-inch rapid-fire guns.

Complement:

The machinery on both vessels will consist of high powered turbines with smaller cruising turbines geared to the propellers. The "Pennsylvania" will have turbines of the Co. bines of the Curtis type, while No. 39 will have the Parsons type.

REPORT OF PACIFIC MAIL STEAMSHIP COMPANY SHOWS **INCREASE IN EARNINGS**

The Pacific Mail Steamship Company's annual report for the year ended April 30, 1913, shows a total increase in receipts over the preceding year of \$296,529.73 or 5.66 per cent.

5.66 per cent.

Steamer expenses increased \$117,889.10, or 3.55 per cent. Agency expenses increased \$68,213.97; general expenses, \$5,271.04; and insurance, \$66,242.90. There was a decrease in charter hire of \$273,017.13, leaving a net decrease in expenses of \$15,400.12. The increase in steamer expenses and insurance, and the decrease in charter hire resulted principally from the purchase last year of the steamers "Mongolia" and "Manchuria," which were operated under charter prior to their acquires which were operated under charter prior to their acquisition.

charging against the year's income the sum of \$410,177.68, the amount of purchase money notes maturing during the year, and \$519,372.08, for depreciation and general and extraordinary repairs of steamers, a total of \$929,549.76, the year's operations resulted in a surplus of \$20,492.08, against a deficit of \$19,082.30 for

last year.

The insurance on the Company's steamers was renewed and \$322,426.70, the premium chargeable to the year's operations, was charged to the year's expenses.

The sum of \$519,372.08 was credited to the reserve for the sum of \$519,372.08 was credited to the sum of \$519,372.08 was cr

The sum of \$519,372.08 was credited to the reserve for depreciation and general and extraordinary repairs of steamers, and charged to the year's income. After charging this reserve with \$98,498.58 for extraordinary repairs and renewals, and with \$76,998.90 for depreciation on equipment lost, condemned, or sold during the year, a total of \$175,497.48, the sum of \$3,094,570.76 remained to its credit at the close of the year, an increase of \$343.874.60 during the year. \$343,874.60 during the year.

General Remarks.

On August 17, 1912, the S. S. "Newport" was sunk at Balboa, due to the collapse of the Panama Railroad Company's wharf. She has since been floated and is now at San Francisco. This accident eliminated one of the Company's best steamers from the Panama service and seriously affected the operations of the Panama Line. Suit is being instituted against the Panama Railroad Company to recover \$800,000, the estimated cost of restoring the steamer, loss of her services, and property losses.

Twelve notes aggregating \$1,230,533.04, face value, issued in the acquisition of S. S. "Mongolia" and "Manchuria." as set forth in last year's annual report, were paid off during the year. The aggregate present worth of these notes at the dates of their redemption was \$809,691.59.

Excepting the notes given for the purchase of the steamers "Mongolia" and "Manchuria," the Company Steamers "Mongolia" and "Manchuria," the Company is free from debts other than those for current expenses. The cash on hand at New York, San Francisco, and London, April 30, 1913, amounted to \$268,491.72.

The fleet and property have been maintained at the Company's high standard of efficiency.

It is indeed gratifying to learn that the largest steamship company operating in the foreign trade under the American flag has this last year a profit instead of a deficit to show. The Pacific Mail Steamship Com-

pany has had a bitter struggle indeed, having to fight foreign subsidized competition single-handed. Nopany has had a bitter struggle indeed, naving to light foreign subsidized competition single-handed. Nothe United States Government would not assist this company, which could very easily have placed its ships under another flag, but for the pride its principal executives felt in honoring their own country by flying the Stars and Stripes. Not only does the Government refuse assistance to the Pacific Mail Steamship Company, in the form of mail contracts and otherwise but they in the form of mail contracts and otherwise, but they bar its ships from the Panama Canal, because they are partly owned by those holding stock in our railroads.

On the other hand, it is interesting to note that the large Japanese companies will operate between Oriental ports to New York via the Panama Canal.

This last is particularly praiseworthy on the part of our Government when Mr. R. P. Schwerin, Vice-President and General Manager of the Pacific Mail Steamship Company, wanted to build four modern passenger vessels York via the Panama Canal. Of course, our ship-builders and our workmen did not need the work these millions of dollars would have meant to them. No, let what few ships we have under our flag in the foreign trade get on the best they can without even average fair treatment.

trade get on the best they can without even average fair treatment.

It was very probable that the railroad-owned ships operating via the Panama Canal might cut rates and the "surplus earnings of the railroads" would have more than compensated them. On the other hand, we couldn't have had another "Interstate Commerce Commission" to govern water rates much the same as rail rates are now governed. Of course not—our Senate and House would rather not be bothered with American ships or shipping. Oh, yes, I have quite forgotten a brilliant stroke on their part and how is it possible to overlook such a noble deed? Vessels under the American flag operating in the coastwise trade are to use the Canal free of tolls. Quite a wonderful idea this. They need this protection, you know, having such keen competition with foreign rivals. As many owners of vessels in the coastwise trade have stated, it doesn't matter to them whether or not they pay tolls as the resulting freight rates would be governed accordingly. However, Congress had to stir up, as it were, the dissention of practically all the foreign maritime nations and misconstrue the Hay-Pauncefote Treaty merely to give free tolls to American ships in the American coastwise trade, when the issue had never been one of any momentous weight. when the issue had never been one of any momentous

weight.

Why have American ships, operating in the foreign trade, been reduced to a mere handful?

They need just treatment and the privilege of operating on the same basis as foreign-owned ships. Until our Navigation Laws are "made over" there can be no hope of an increase in ships built for the foreign trade of the United States.

What's the use—we've built the Panama Canal for r. Foreigner's use—Congress has done everything possible to foster and sustain foreign shipping in bur-

dening our own.

Let's hope that some day soon the awakening will come. Probably with the procession through the Panama Canal. Who can tell?

ECONOMY IN SHIP CONSTRUCTION AND NOTES ON RIVETING

By JOSEPH R. OLDHAM, N. A. M. E.

The riveting is by far the greatest item of expense, apart from the cost of raw material, in the construction of a steel ship. To be specific, I may say that a large steel plate intact, costing \$60, will cost \$20 to rivet, while the balance of the labor, such as hauling into position, templating, laying off, punching, countersinking, hanging and bolting will cost \$8.20. From this it may be inferred that for a large steel plate, say 25 feet, by 5 feet, by three-quarters of an inch thick, which will cost \$60, the labor, including riveting, will cost \$28. Thus the cost of material amounts to 68 per cent., and the cost of labor, including riveting and caulking, amounts to 32 per cent. of the total cost.

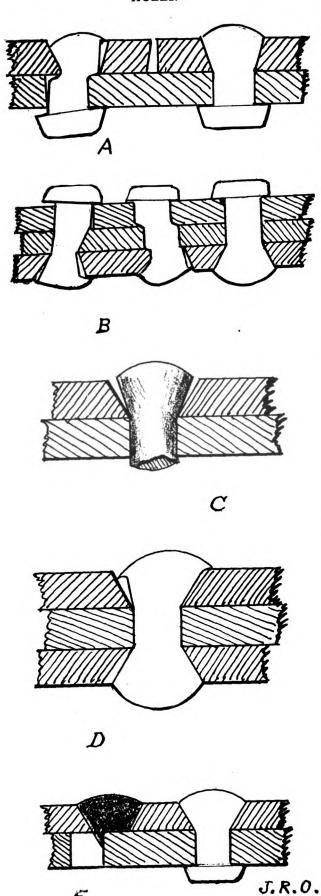
It is not many years since the relative ratio of cost of raw material and labor was almost the exact reverse of this proportion. I know of an instance, for example, in which the whole of the structural steel for a large ship was purchased at the rate of one cent per pound, delivered here. Such steel to-day would cost about one and eight-tenths cents per pound, though improved machinery and appliances and lessened cost of marine transportation must have reduced the cost of production, notwithstanding the advance of wages.

The strictly modern surprising economy of ship-yard labor, in comparison with the cost of material, is due partly to the high price of steel on the one hand, and



Public

DEFECTIVE RIVETING, DUE TO IMPERFECT HOLES.



on the other to the great saving in the production of motive power, and to the extreme facility with which the greatest plates and bars, or a combination of these, can now be handled, cut, bent, punched, countersunk (and rymed if necessary), planed, and fitted in place, in a good modern ship yard. I may therefore predicate that greater economy in ship construction must now be looked for in the increased use or application of machine riveting, more especially in the more EXTENSIVE adoption of hydraulic riveting machines.

There is no reason why, with improved modern structural designs, fully as much as 90 per cent. of the shell riveting should not be effected with these great machines. It may easily be demonstrated how this may be effected. By this it should seem that the raw material costs about twice as much as the mechanical and manual labor, thanks to the economy in time and labor, due to the adoption of powerful handling mechanisms, air tools, and other mechanical appliances. By raw material I mean rolled plates and bars, as such are the shipbuilders' raw material, just as the iron ore is the steel makers' raw material.

The total cost of labor throughout the hull will exceed 32 per cent., and may frequently reach 40 per cent, or more in passenger steamers.

My former computation had reference to the shell; so here let me explain: A three-eighth plate will cost about as much to template, punch, drill and fit as a threequarter plate, with the most approved modern machinery, though the raw material will cost only half as much. Such thin plates, however, do not amount to over 15 per cent. of the total weight of steel in the hull of a large modern steamer. The only item which is materially less in labor cost of the light plate is the riveting; consequently the labor cost of the thick plate will be only about 15 per cent. greater than that of the thin plate.

Now, though patterns for imitation are usually the most desirable illustrations, occasionally it may be equally edifying to show examples to deter, and in the illustrations A and B I wish to exhibit some actual deformities of riveted construction as may be seen any time after the plates of old vessels have been fractured. either designedly or accidently, and I am sure I do not exaggerate when I aver that I have seen thousands of rivets as defective as those shown in the first two of the five illustrations herewith.

With reference to hydraulic riveting, Mr. Montgomery, in quoting the late Mr. Martell says, "it has been found to lead to good results, when rivets with countersunk heads are used, to make the angle of countersink in the plate less acute than that in the rivet," say as per figure C. While a slightly different angle is desirable between the rivet and the plate, according to my experience, such divergence must be made with great care. for when the taper is too divergent, leaving too much "play" beneath the plug-head, the rivet may easily be pressed to one side, if the pressure of the machine is not absolutely true, and then the plug-head will fill the hole on one side only as shown by illustration D.

My last illustration, E, shows a rivet in a "blind" hole. In modern, high-class ship-building works, where "system" prevails, the supervision conscientious, and foremen riveters reliable, blind holes are seldom found. but in small yards, where the foremen are not numerous and the store-keeping is not systematically controlled, errors may still prevail and probably such defective work might still be discovered, say in some out-of-theway parts of coal bunkers, or in the peaks and tanks.

Such rivets as I show in illustrations A, B and E

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SHIPBUILDERS AND **ENGINEERS**

were not, of course, in a majority in the same plate or bar, but it would not be difficult to exhibit a decided plurality of such undesirable units, say, in the peaks, or in cramped corners of the ballast tanks, in many yards of the old country.

A good many years ago a little vessel was built to the order of John Pile by Messrs. Austin & Hunter of Sunderland. (This was long before G. B. Hunter built the "Mauretania.") The little steamer was completed and nicely painted and had all the appearance of being a thoroughly staunch vessel; but after being at sea for a short while she gave some trouble. She was taken out of the water by a marine railway at Hull, but during the repair the shipyard caught fire, in which the steamer was involved, and she was more or less badly burned. Now, the strange result of this fire was, wherever the new paint was, streaks of lead were seen running down the sides, and on careful investigation it transpired that "blind" rivet holes in several parts of the hull had been filled in with lead. The riveters had worked piece-work on this vessel and they used to help themselves to rivets and mark down the weight; but, unfortunately, at the same time, they helped themselves to pieces of scrap lead, which was stored in a neighboring bin, and to save the time required to call a rymer and have the blind holes drilled through, they had hammered in pieces of lead, which they finished off just like a rivet. This saved the riveters time, and the lead fillers were credited to them with the iron rivets.

I always blamed the superintendent, McIlvaine, for these rivets, as his foreman riveter had a blind eye, and I fear that he was sometimes in the habit of employing it as Capt. Horatio Nelson used his defective optic. When told that the retiring signal was calling him off at the Battle of Copenhagen, he placed the spying glass to his blind eye and said he be d-- if he could see it.

An experienced surveyor may detect such rivets as these on sight, even among groups of rivets, and they readily disclose their weakness or deformity to the Though every rivet should be carefully testing hammer. examined by the inspector, it is hardly possible for him to test, with a hammer, every rivet in the hull; measure the size of material, and see that all are sound, fair and closely fitted. So I may say that in good shipyards, it is seldom that the necessity exists for testing all of the rivets in the hull. A safe rule is to examine all carefully, and then apply the hammer test to all of the rivets binding three or four thicknesses; and finding these generally satisfactory, it will seldom be necessary to test the riveting of two thicknesses in the same locality; as it may fairly be assumed that the men who make good work on three thicknesses of plates, or plates and bars, will certainly make solid work on two thicknesses, consequently, the hammer test here and there will be sufficient for these. Of course, judgment must be exercised as to the capability and reliability of the workmen and staff.

To conclude, let me say that a careful, or even scientific, arrangement of butts, or laps, is a most important structural element. The close fitting of laps or butts is an essential of good work. Great care that bars, plates, or rivets are not burned or "blue heated" is a sine qua non in good shipbuilding; and solid metallic caulking is of vital import. Of more importance, however, than any of these desiderata are carefully spaced rivets of accurate diameter for the mean thickness of plates, as such directly affects the net section of plates left after perforation. But absolutely true rivet holes, coupled with perfectly solid riveting, are the paramount essentials of staunch and reliable construction.

"JONAH AND THE WHALE"

The Maritime Exchange Bulletin of New York received the following from an "Ancient Mariner" and which is really good:

"I read an article in the 'Boston Traveler and Evening Herald' recently to the effect that a few sky pilots of the Methodist persuasion were having a little 'scrap' over 'Jonah and the Whale.' They do not seem to be sure as to whether Jonah swallowed the whale or the whale swallowed Jonah, and want the ancient fish story eliminated from the sailing directions. As I am always ready to referee a scrap of any kind, with all due respect to the cloth, I will tell what I know about it.

"Every kid who has paddled a boat around the harbors where the old-time, square-rigged, deep-water ships and whalers sailed from has heard the old 'shanty' sung by the sailors when they are heaving up the anchor:

There was a big fish and his name was whale, Oh, yer, Oh! He swallowed Jonah head and tail, A thousand years ago.'

"These old shantys have put the wanderlust into more boys and made sailors of them than anything else ever did. There is not an old 'come-all-yer' alive to-day who would stand for having that cherished old fish story eliminated from his sailing directions. So I am going to tell you a story that will establish the fact that Jonah was swallowed by a whale.

"When I was a small boy, my folks moved to a seaport town where the principal industry was whaling. From the first day that I went down on the docks and listened to the stories told by the old blubber hunters my one and only ambition was to go to sea on a whaling ship. My mother tried to talk me out of the notion, but the more she said on the subject, the stronger was my desire to go. So she finally got me a berth on the 'Betsy Jane,' Captain Tom Coffin, for a cruise to the Arctic and Western Pacific, where we intended to finish our catch and return home via the Cape of Good Hope, after making the voyage around the world. Everybody who has ever eaten a doughnut fried



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in whale oil knows Tom Coffin, the most successful skipper that ever sailed a blubber hunter. Joe Bunker was first mate. What he could not do with a harpoon is not worth mentioning. He was certainly 'some' on a long dart. We sailed away from our home port with only part of a crew, intending to call at the Cape De Verde Islands for the remainder. Our crew did not have a regular wage. They were on a 'lay,' or a portion of the catch, for their services, and the way they would soak these niggers was a caution. As they did not know the difference between a 50th and a 250th lay, they seemed to think the more figures there were, the better the lay, and usually found out their mistake at the end of the voyage.

"After leaving the Cape De Verde, we sailed south, got a few whales on the southern whaling ground, then went into the Falkland Islands for water and vegetables. then proceeded around Cape Horn to Honolulu, where we were to take on an extra supply of stores before proceeding to the Arctic. Honolulu was more of a whaling station at that time. It was isolated to a great extent, and whalers would go there to re-fit and sometimes land their oil to be re-shipped home on a merchantman. There was another reason, namely: if a sailor ran away we could always replace him with a Kanaka-who was not any wiser on the lay question than the nigger was. I will add right here that if there was ever any industry in this country that needed Lawsonizing any more than the whaling and latter day merchant marine does, I have not heard of it.

"We were not long in Honolulu, as everything was ready for us to take on board, and we were soon on our way to the Arctic, where we caught so many whales that before the days got too short Captain Coffin decided to take a chance of filling up on the whaling ground in the Western Pacific; so we headed the 'Betsy Jane' toward the equator, intending to get into the westerly current and cruise across the Pacific near the equator and enter the Indian Ocean via Ombay Strait. When we were first on the whaling ground I was assigned to Mr. Bunker's boat. Mr. Bunker took an interest in me, and taught me all there was to know about handling a harpoon and managing a boat. I was an apt pupil. Everything always came easy for me on shipboard, and it was not long before I had charge of a boat. We cruised along among the islands, landed on some of them to get water and yams, fruit, etc., and often the natives would come off with green cocoanuts and other things to trade for tobacco. When we got over on the coast of Timor we found plenty of whales, and it was here that I had the greatest adventure of my life-one that I hope will settle the question of Jonah and the whale, and the sky pilots that got so excited over the question will shake hands and be good boys and let the ancient fish story remain where it is. have got used to it. If you begin weeding out the old sailing directions you will find a lot of things that are as much of a puzzle to the ordinary layman as this ancient fish story.

"One day we sighted a large school of whales. There was a lot of excitement on board the 'Betsy Jane,' as we only wanted a few more whales to fill the empty casks we had left. At the sight of these whales visions of home began to float through our minds; so we worked with a will to get our boats out and after them. The first one that came up near my boat was a whale in every sense of the word. He had more barnacles on him than I ever saw on a ship's bottom when in the dry dock, and his back was bristling with rusty harpoons that he had collected in years gone by. How-

ever, when he came up again I added a couple more to this collection and sung out, 'Stern all!' Quick as a flash, the whale hit my boat with his tail and sent us skyward at the rate of 20 knots. When I started to come down there was the whale standing right on end with his mouth open, and his throat looked like the entrance to the subway. I was going through the air so fast that I went in between his jaws and landed in his stomach before his jaws came to with a crash like the door of a pay-as-you-enter car. The air was not very good, but there was plenty of light, owing to the fact that the whale had made his breakfast off of phosphorescent jelly-fish and squid. I stood there, dazed for a minute, when I noticed something that looked like letters on one of the glands of the side of his stomach. I walked over, took up a piece of a jelly-fish so I could see to read, and there I saw, pricked in with India 'Jonah, B. C. 1685.' I had often ink, the words : heard my mother tell about the whale that swallowed Jonah, and I had often heard the old blubber hunters tell about a whale whose hide was full of harpoons, and who had smashed every boat that ever tackled him, and I began to feel blue. However, I took a good big chew of tobacco to settle my nerves, and on my way over to take a seat on the corner of the whale's liver to think it over my foot hit something hard. I picked it up and found it was a horn-handled knife. It had Jonah's initials on one side of the handle, and a picture of the American eagle on the other. While sitting there, I noticed that the whale's stomach was not used to tobacco, so I took up the knife I had found and cut up the plug of tobacco I had with me and sprinkled it all over his stomach. It worked like a charm. In a few minutes the whale had convulsions; then his stomach turned inside out and I landed in the water close to Mr. Bunker's boat that was towing a whale over to the ship. I told them where I had been, and about the inscription in the whale's stomach. They doubted my story until I showed them the jack-knife with Jonah's name on it. If that old Biblical story of 'Jonah and the Whale' is not true, put me down as a fit candidate for the Ananias Club."

S. S. "SANTA CATALINA" IS LAUNCHED

The steamer "Santa Catalina," the third of the fleet of four steamers building at the yards of the Cramp Shipbuilding & Engineering Company at Philadelphia for the New York and San Francisco service of the Atlantic & Pacific Steamship Company, of which Messrs. W. R. Grace & Co., New York and San Francisco, are agents, was launched July 19, in the presence of a notable gathering of officials from the builders' and owners' staffs.

The christening ceremony was gracefully performed by little Margaret Ella Scott, daughter of Mr. A. L. Scott of the steamship department of Messrs. W. R. Grace & Co.

The first steamer built for this service, the "Santa Cruz," is already in operation. She is 6800 tons deadweight carrying capacity, with accommodations for fortyeight passengers

The "Santa Clara," the second vessel of the group is now loading at New York and is to proceed to the Pacific Coast about the first of September.

This steamer, the "Santa Catalina" and the "Santa Cecilia," are shelter deck cargo steamers of 10,000 tons deadweight capacity and have the following dimensions: Length, 420 feet; breadth, 54 feet; depth, 36 feet 91/2 They are built on the longitudinal system of



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framing with all modern improvements for the handling of both high-grade and bulky cargo. The speed loaded is to be 13 knots and the total displacement will be 12,100 tons. The block coefficient is .75. The rig is that of a schooner with two masts. There are four derricks to each hatch, each 50 feet long and made of Mannesmann steel tubing, served by double winches of the latest Williamson type mounted on derrick tables. This arrangement will permit of quick handling of the cargo in and out of the four spacious holds.

The propelling machinery is of the quadruple-expansion type, having cylinders 25½, 37, 52½ and 76 in. by 54 in. stroke, steam being supplied by three single boilers 15 feet 5¾ inches by 12 feet 4 inches, built for a working pressure of 220 pounds to the square inch. The furnaces are fitted to burn oil fuel, which is carried in deep tank to the extent of 1,000 tons, in addition to the usual ballast tanks.

The accommodation for crew and petty officers is located aft and includes folding beds instead of the usual sleeping berths. Officers and engineers are berthed in deck house amidships, which contains unusually large rooms fitted with desks and lockers. The captain's quarters, located convenient to the navigating bridge, include a living room 25 feet square, fitted in the most elaborate manner with quartered oak wainscoting and every convenience made necessary by the special trade for which these steamers have been designed.

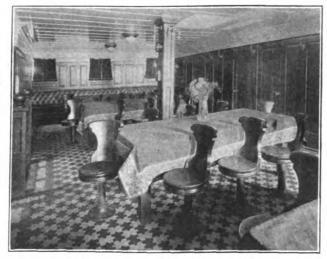
The vessel's equipment includes a complete electric lighting installation and there has been installed for the conveyance of ship's stores and fruit cargo an ice-making plant designed to cope with an insulated space of 500 tons.

The construction has been carried out to the rules of Lloyd's Register to obtain highest class and the specifications have been drawn with a view to producing a class of vessels unexcelled among others of their type for cargo despatch and as floating homes for their crews.

The "Santa Clara" will be followed by the "Santa Catalina" about the middle of September. The "Santa Cecilia" has not yet been launched and her date of entry in service is still undetermined, although it will probably be during October.

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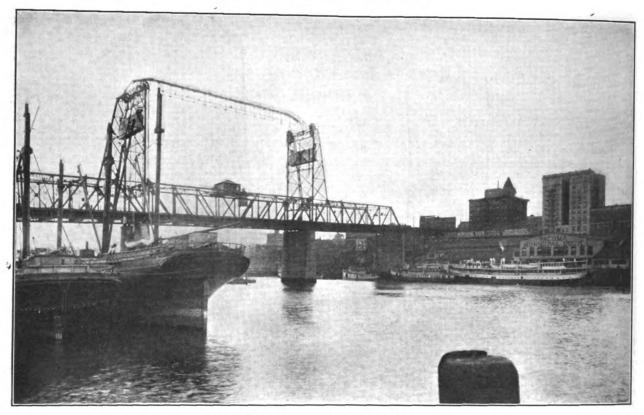
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TACOMA'S VERTICAL LIFT BRIDGE.

TACOMA'S NEW MUNICIPAL BRIDGE

This bridge is a vertical lift, and has a clearance of 90 feet at high tide, and when lifted allows clearance sufficient for any ocean-going vessel to pass under. It spans the Municipal Waterway, which lies between Tacoma's business district and the industrial or manufacturing district on the tideflats. There is in the neighborhood of 8,000 foot passengers who pass over this bridge every 24 hours.

The bridge was completed in April of this year, and was financed by the sale of 20-year, non-redeemable bonds, until the end of that period. These bonds are covered by general tax levy on the property of the city.

An additional levy is made to pay interest each year. A levy is also made each year to provide a sinking fund with which the bonds will be redeemed. No toll is charged for traffic over the bridge.

This bridge has a peculiar feature never before worked out in vertical lift bridges. It is built on a grade, and the grade over the lift is 21/2 per cent. This is not shown in the picture for the reason that the photograph was taken from the low end of the bridge. Prior to construction of this bridge, it was supposed to be an engineering impossibility to construct a lift span on a grade, but the scheme was worked out, and when the bridge was put in operation it was found practicable.

HARBOR IMPROVEMENTS AT LOS ANGELES, CALIFORNIA

By C. M. GORDON, of the Los Angeles Harbor Board

Port expansion and development have been progressing rapidly at Los Angeles during the past year.

When the seaport cities of San Pedro and Wilmington were brought within the corporate limits of the City of Los Angeles, the enlarged city voted \$3,000,000 for immediate expenditure in harbor improvements. This sum became available in April of last year, and has been largely expended or contracted for. In May of this year the city voted another bond issue of \$2,500,000 to carry on the good work.

The city intends-when the proceeds of this second bond issue have been expended-to make further similar investments in the harbor until at least \$10,000,000 has been devoted by the city to constructive work and equipment in the port. Splendid results have been obtained to date, and no pause is contemplated in the making of this admirably located seaport one of the finest in the world.

Municipal Pier No. 1 is one of the strikingly important of the city's harbor improvements. Located in the outer harbor on the left of the entrance to the inner harbor,

it occupies a commanding position that entitles it to the special consideration it is receiving. Its measurements are as follows:

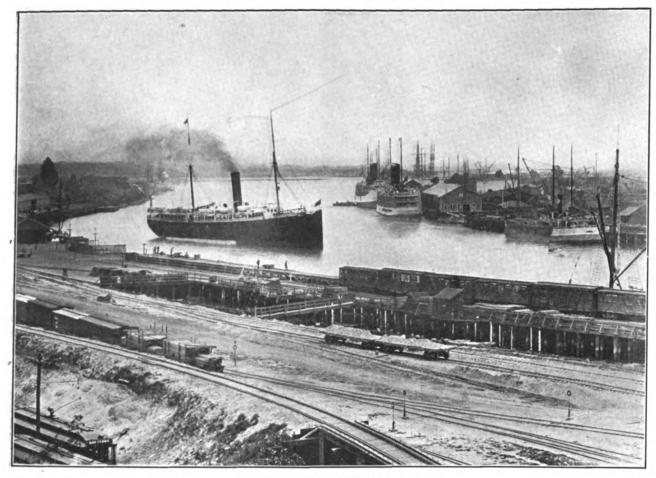
as follows:	
Length 3,80	00 feet
Width 65	
	35 feet
Height above water, low tide	4 feet
	9 feet
Channel width on right 40	00 feet
Channel width on left 50	00 feet
Wharf frontage11,00	00 feet
	9 acres

On this magnificent pier is to be built 11,000 feet of the finest reinforced concrete wharf, and of this, the first unit of 2,520 feet, is now under construction.

This wharf is costing \$175 per lineal foot, and will be ready for shipping in about nine months.

Plans are completed for a fireproof steel and concrete transit shed for this wharf, 100 feet wide by 1,800 feet long and 33 feet high.

Next to the sheds will be numerous railroad tracks,



VIEW OF LOS ANGELES HARBOR

and next to these paved roadways, and next to the paved roadways reinforced concrete warehouses each 6 stories high and 180x600 feet in ground area.

In the inner harbor the city has just finished an excellent creosoted pile wharf 50 feet wide and 1605 feet long and costing \$65 per lineal foot.

It is on what is now known as the Mormon Island Channel, but will, in the ultimate plans of harbor improvement, be on Slips Nos. 1 and 2.

The contract for a transit shed 100x600 feet for this wharf has been let and the putting in of paved roadways and railroad tracks to it is about to be commenced.

A wharf known as the Water Street Wharf is just being finished by the city.

It occupies 670 feet of the Wilmington Slip, and is being provided with first-class paved roadways and railroad tracks, as are all of the city wharves.

Near to this wharf the city has another of 330 feetboth are on creosoted wooden piles, and are estimated to have a life of from 15 to 20 years.

In addition to the improvements already referred to, the city has paved some 5 miles of street in approaches to its docks-has condemned much land for boulevard and warehouse purposes, and has done much dredging.

The Federal Government too has been continuously dredging in the main channels and in the outer harbor, carrying the dockage depth of 35 feet out to the 35-foot contour.

Private interests in the harbor have also been busy improving their holdings. The Outer Harbor Dock & Wharf Company claims under leasehold a pier area in the outer harbor of 154 acres. Located next west of Municipal Pier No. 1, it, too, is 3,800 feet long by 1,150 feet wide, with 5,400 feet of concrete and wood wharf built. On it are two transit sheds-one 75x850 feet, the other 102x550 feet, and the pier is served by adequate roadways and railways, while the water surrounding it is from 30 to 35 feet deep at low tide.

Next west of this and adjoining the breakwater, the General Pipe Line Company has just finished its oil loading station and platforms and has begun shipping crude oil. The Union Oil Company is largely interested in the Outer Harbor Dock & Wharf Company, and is preparing to handle oil in very large quantities.

The city owns 146 acres of most valuable water area adjoining the shore and the Union Oil Company's property and just inside the breakwater. This it is preparing to fill and improve with piers suited to the oil businessthe city's plan being to confine the oil business to this part of the harbor.

A pier similar to Pier No. 1 is contemplated by the city for the right hand entrance of the main channel.

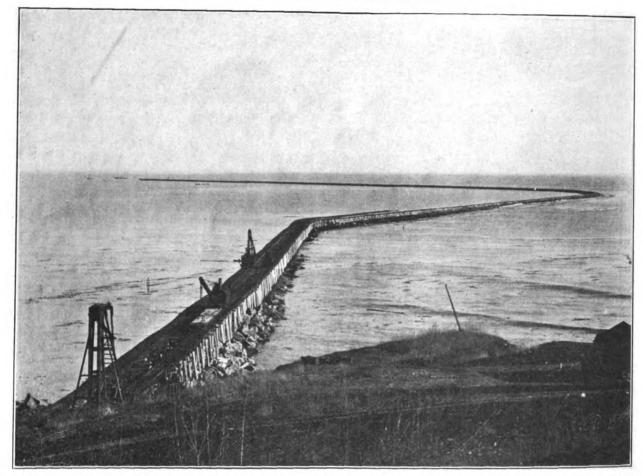
This is to be 1,000 feet easterly of Pier No. 1 and devoted chiefly to the Quarantine station, the Immigration sheds, Torpedo Boat station, and a base of supplies for lighthouses, the Army and the Navy.

Other privately owned wharves completed and doing business are:

Pacific Wharf & Storage Co1,500	feet
Salt Lake Railway Co3,000	feet
Crescent Wharf & Storage Co1,650	feet
Southern California Lbr. Co1,070	feet
Hammond Lumber Company1,000	feet
Southern Pacific Railway Co6,630	feet
San Pedro Dock Co 340	feet
San Pedro Lumber Co	feet
Kerckhoff-Cuzner Lumber Co 730	feet
Consolidated Lumber Co1,083	feet
Pacific Lumber Co 737	

This gives the harbor a total wharf frontage of 29,850





BREAKWATER AT SAN PEDRO, 9250 FEET LONG, SHOWING WORK, FILLING IN OPEN TRESTLE, 1800 FEET LONG, THIS BREAKWATER IS NOW COMPLETED. LOS ANGELES HARBOR.

feet, of which 4,800 feet are under construction and 5,125 feet of which belong to the city:

2,310 feet have 21 feet of water;

22,500 feet have 30 feet of water, and

3,500 feet have 35 feet of water at low tide.

The city has just let a contract for dredging 1,300,000 cubic yards in the inner harbor, and is contemplating putting in a first-class dredging plant of its own.

The city is also now engaged in establishing a great rail and water terminal which they will operate, and to which all railroads may come and be taken care of on equal terms and without discrimination.

The city is also laying plans to widen the channel to the inner harbor from 500 to 750 feet and possibly to 1,000 feet, and to deepen it throughout to 35 feet at low

NEW VESSELS FOR ROYAL MAIL STEAM PACKET CO.

The Royal Mail Steam Packet Company is to increase its enormous fleet by six new triple-screw vessels of 16,000 tons, which are to be used in their West Indies and South American service. These vessels are to be named as follows: "Andes," "Ormeda," "Arlanza," "Alcantara," "Ordina," and "Orca."

The "Arlanza" was launched last month and is to be followed by the "Andes," which is to be launched very

Detailed information concerning these magnificent new vessels, which are to reduce the trip from New York to Argentine from 22 to 18 days, will appear in the October issue of the "Pacific Marine Review.

As reported in our May issue, ten million dollars is being expended in the construction of a modern fleet of steamers for the Royal Mail Steam Packet Company and which are to engage in the transpacific trade.

The first of the seven steamers building for this service, at an approximate cost of \$1,500,000 each, will leave London on November 22 for this Coast.

A lengthy article in connection with the above will also appear in our October number.

SPLENDID INSURANCE BUILDING COMPLETED.

The Liverpool and London and Globe Insurance Company held a reception on August 21 in their new building on California street. The lower floor of the building was a beautiful sight, for California's loveliest flowers were much in evidence.

Both the interior and exterior of the building are quite exceptional, and it is a very valuable and attractive addition to California street.

This company has the honor of having written the first insurance policy on improved San Francisco property and is one of the oldest companies now operating on the Pacific Coast, its San Francisco Branch having been started in 1852.

MR. LINCOLN SMITH RECEIVES DESERVED PROMOTION.

Official announcement has been made of the appointment of Mr. Lincoln Smith as assistant manager to Captain J. W. Troup, manager of the C. P. R. British Columbia Coast Steamship service.

The promotion of this well-known official comes after many years of faithful service in the interests of the greatest Canadian transportation company.

GOVERNMENT DREDGE LAUNCHED.

The steel ocean-going dredge "Col. P. S. Michie" was launched on August 16 at Seattle, Wash., from the yards of her builders, the Seattle Construction & Dry Dock Company. The new vessel was christened by Eleanor M. Chittenden, daughter of Gen. H. M. Chittenden, president of the Seattle port commission.

The "Col. P. S. Michie" is a powerful twin-screw vessel 244 feet in length, 43-foot beam, and a depth of 24 feet. She is of the central well type, and will have a capacity of 1000 cubic yards.

The "Col. P. S. Michie," when completed and equipped, will cost approximately \$350,000. She is first to be used in Government harbor improvement work at Coos Bay, Oregon. Her special work will be the deepening of harbors on the Pacific Coast. The construction of this dredge was under the supervision of United States Naval

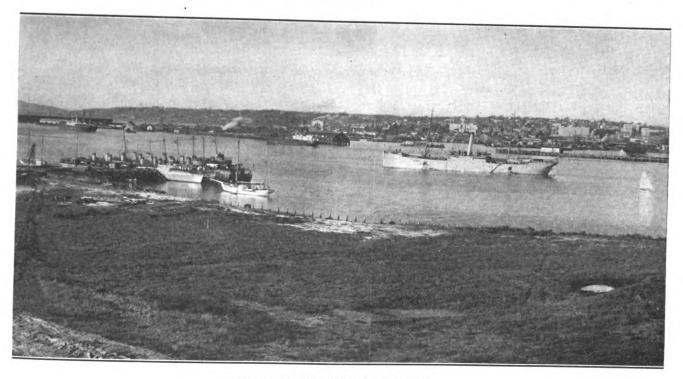
Constructor G. C. Westfeldt, who represented Major J. J. Morrow of the United States Engineering Corps.

LUMBER SCHOONER LAUNCHED AT HOQUIAM.

The S. S. "Daisy Putnam," built for the S. S. Freeman Company at the Matthew's Shipyards, Hoquiam, Washington, was successfully launched on August 9.

The "Daisy Putnam," description of which appeared in the August issue of the Pacific Marine Review, is the last boat to be biult at the G. F. Matthew's yards this season. On completion of her upper works, she will be towed to San Francisco by one of the Freeman steamers and the propelling machinery will be installed by the United Engineering Works, at Oakland.

The "Daisy Putnam" will be used for freighting purpose, her lumber carrying capacity being a million feet.



SAN DIEGO'S HARBOR

By BERTRAM HOLMES.

San Diego's harbor and waterfront is alive with the promises wafting northward from the Panama Canal. Heavy construction work is at an advanced stage and the government has called for bids on a great dredging undertaking. Secretary of the Navy Josephus Daniels has announced that 34 battleships will soon anchor at one time in San Diego bay and that the Navy Department plans to take every advantage of what he terms the "God-made harbor."

San Diego harbor was recognized 300 years ago by the early Spanish explorers who never failed to note in their logs that it afforded a place where their ships could lie in safety.

During the greater part of the nineteenth century, when ships were comparatively small, the harbor had no needs whatever. The greatest ships in the world could enter and dock without the aid of a tug.

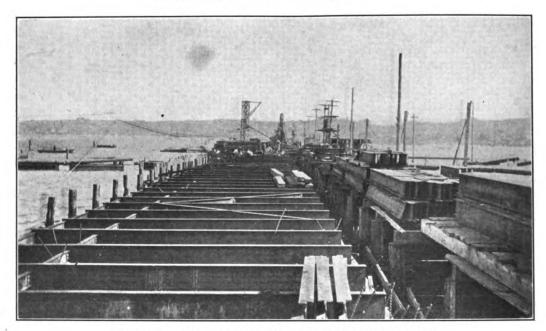
At the present time, none of the steamers calling at San Diego use a tug to assist in turning around in the harbor, and there is no place between the ocean and the docks where the largest vessel on the Pacific Coast need slacken speed to keep from dragging on the bottom.

The fastest passenger vessels on this coast, the S. S. "Yale" and S. S. "Harvard," have passed through the bay at full speed. These vessels, however, generally go at half-speed, ten miles an hour, as the swell from a speed of twenty knots is too much for small boats at moorings. There are harbors on the coast where the same vessels are held down by municipal ordinance to a speed of four miles an hour.

Formerly the bar at San Diego carried 28 feet of water at low tide, which was considered quite deep enough. With ships of greater magnitude, it became apparent that 28 feet would soon be too shallow, so the United States government was induced to spend \$125,000 last year to deepen the bar three feet and to straighten the channel for convenience. This work was accomplished last summer and observed in the hydrographic reports.

Soon afterward Congress voted the sum of \$225,000 for deepening the bar to 35 feet and to further improve the channel. Lieut.-Col. C. H. McKinstry, United States engineer, quite recently called for bids for the work, and it is expected that the work of dredging will be com-





SHOWING CONSTRUCTION WORK ON PIER AT SAN DIEGO

pleted before the actual need for this depth is evinced.

One important feature of the bar and channel improvements is that San Diego bay has what engineers term a tidal basin in that it has no fresh-water running into it to fill the bay with silt.

The city of San Diego is carrying its own share of the improvement work, at this time being far advanced in the expenditure of a million dollars for the building of a great pier and the starting of a large bulk-head which eventually is expected to extend around the bay.

The pier is to be of concrete and steel, 800 feet long and almost 130 feet wide. It will be equipped with railroad tracks and a warehouse, and constructed in water deep enough at low tide to accommodate any leviathan that might come over the bar at high tide. The plans for this pier were made before there was a certainty that the government would dredge the bar to 35 feet.

The bulkhead will be of reinforced concrete, thirteen feet wide at the base and 4 feet wide at the top. The present part of the bulkhead, now under construction, is to be 2700 feet long, and a bulkhead line is to be estab-

lished all the way around the bay. Along the top of the bulkhead a floor or apron about 25 feet wide is to extend the entire length. This apron is supported near its outer edge by concrete piles placed closely together.

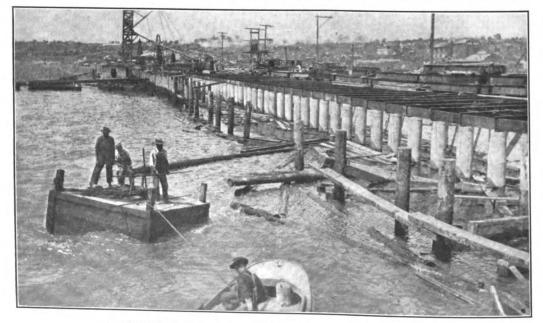
The city has a fourteen-inch suction dredger at work pumping mud outside the bulkhead to the other side where there is a reclamation job of about 35 acres in progress. The distance from the bulkhead to the shore is 675 feet. Already 20 acres have been reclaimed to a depth varying from one to 13 feet. A new dredger, with an eighteen-inch suction will be ready early in August to take part in the work.

In addition to the bulkhead, which extends northward from the foot of Broadway, there is a temporary bulkhead extending southward and enclosing about seventeen acres. This was built to provide a dumping place for the extra mud which must be removed near the pier.

The pier is about half completed. Of the total 540 piles required, 230 are set and ready for steel. Some steel is already in place and practically the entire 800 feet of false work is ready for use.

The bulkhead is being built in 300-foot sections, three of which are completed. The fourth is ready for concrete, and fifth is in progress. All of the work must be done by May, 1914, and there is every prospect that it will be finished by this time.

Another improvement, scheduled for the near future but not yet started, is the completion of the government coal dock near the entrance



SHOWING BULKHEAD UNDER CONSTRUCTION AT SAN DIEGO

to the bay. The dock was built a few years ago and almost forgotten by the Navy Department. Up to the present time it has remained as a dock with a finished floor and a track. Lieut.-Col. Com. Richardson, U. S. N., two years ago decided to use it as it stood and therefore had the dock piled over with coal for emergency use. It was a makeshift arrangement but there were so many emergencies requiring the use of coal that the government soon realized the dock should be finished and put into regular commission. Word was received from the Navy Department at San Diego a short time ago, that the completion of the coaling dock would be started at an early date.

As the best harbor in the world cannot promise much in a commercial sense if it has not the necessary shore connections, it has been thought that the single track of the Santa Fe does not warrant great expectations for San Diego.

Positive assurances, however, were recently made by John D. Spreckels, that the San Diego & Arizona railroad to Yuma, with eastern connections, would be in operation within a year and thereby give San Diego straightaway rail transportation with the rest of the United States in addition to the Santa Fe's line from Los Angeles.

CHITTENDEN ROAD.

That excellent Seattle paper, "Western Woman's Outlook." publishes a very appropriate note concerning the honor conferred on General H. M. Chittenden, when the military road in Yellowstone National Park was named after him.

This publication, which is edited by a number of talented women of the State of Washington, deserves every credit for the stand taken during the recent municipal elections at Seattle. They vigorously upheld the actions of the Seattle Port Commission and protested against the increase of its members from three to five, as was proposed. They also clearly pointed out why the Harbor Island Scheme should not be adopted. This is especially praiseworthy considering the fact that so much pressure was brought to bear to influence the voters to lend their support to the development of Harbor Island, which is so far remote from the business and shipping center of Seattle.

The Western Woman's Outlook has the following: "The naming of the military road, just completed in the Yellowstone National Park, in honor of General H. M. Chittenden, is a compliment in which Seattle people feel a just pride in sharing. Though having passed a long period of years in the military service of the nation, General Chittenden is now a citizen of Seattle. While in the army he was attached to the engineer corps and is credited with some notable achievements in that branch of the service. Because of his proficiency he was often assigned to duty in civilian undertakings along the line of his specialty. Aside from building roads, bridges, jetties and harbor improvements, requiring unusual engineering skill, he attained nation-wide renown because of his exhaustive survey of the San Francisco water supply system, a work of exceptional scientific accomplishment. General Chittenden is not only a great engineer but a distinguished writer as well. He is the author of several books of scientific authority and a number of charming magazine articles in lighter vein. At present he is publishing a series of contributions in Pacific Marine Review on the Ports of the Pacific, which are certainly entertaining to the general reader as well as being valuable for scientific reference."

NEW YORK'S WATERFRONT.

The straight waterfront in Greater New York is 555 miles. The straight waterfront in New Jersey is 193 miles. Total waterfront (straight) in port of New York is 748 miles.

In Greater New York 224 miles of wharfage has been developed of a straight waterfront of 100 miles. In New Jersey 133 miles of wharfage has been developed out of a straight waterfront of 20 miles. Total, 357 miles.

ANOTHER INVESTIGATION TO BE MADE OF DOCK SITE.

While a report concerning conditions at the site of the dry dock at Pearl Harbor, Hawaii, has been received by the Navy Department, further investigations are in progress.

Mr. Alfred Noble, an eminent effgineer of New York, has been employed by the Navy Department to proceed to Pearl Harbor, Hawaii, to thoroughly investigate the Dry Dock site and local conditions and to make full report and recommendation to the department.

Mr. Noble left San Francisco August 12 for Honolulu and it is rather uncertain as to what length of time his investigation will take.

THE WELLAND CANAL.

The Welland Canal, connecting the St. Lawrence with the Great Lakes is undergoing improvements of such magnitude that they will total about \$2,000,000 per mile. The canal, which is 25 miles in length, traverses a lofty divide over which it is necessary to raise vessels to a total vertical height of 326 feet. The new work of improvement, taken in connection with the deepening and widening of the St. Lawrence channel, will have a most important effect on the problems of movement of freight from the Northwest to the Atlantic seaboard.

A TOKYO-YOKOHAMA CANAL.

A project is on foot to organize a company for constructing a canal connecting Tokyo with Yokohama, under the Canal Law enacted by the Japanese Diet last year. Among the promoters are Baron Senge and other noted business men of Tokyo and Yokohama. The prospectus of the company will shortly be made public.

STATEMENT OF THE OWNERSHIP, MANAGE-MENT, CIRCULATION, ETC., of Pacific Marine Review. published monthly at San Francisco, California, required by the Act of August 24, 1912.

Name of—Post-Office Address
Editor, J. S. Hines, 24 Calif. St., San Francisco.
Business Managers, M. D. R. Hines and J. S. Hines,
24 Calif. St., San Francisco.

Business Managers, M. D. R. Hines and J. S. Hines, 24 Calif. St., San Francisco. Publisher, J. S. Hines, 24 California St., San Francisco. Owners: (If a corporation, give names and addresses of stockholders holding 1 per cent or more of total amount of stock.) J. S. Hines, 24 Calif. St., San Francisco.

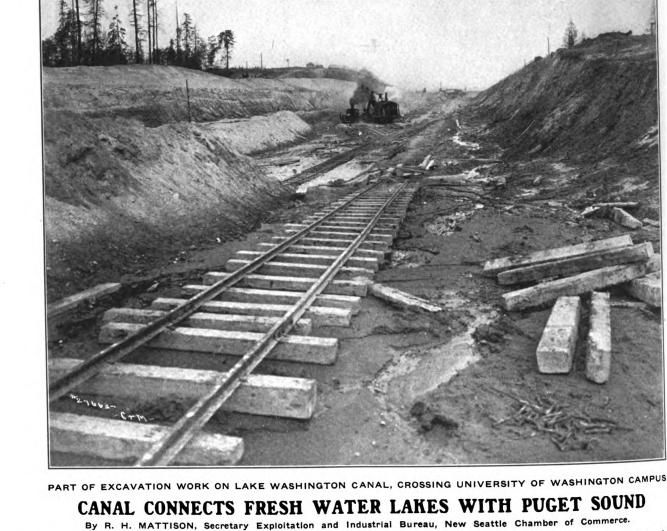
Known bondholders, mortgagees, and other security holders, holding 1 per cent or more of total amount of bonds, mortgages, or other securities: None.

Average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date of this statement. (This information is required from daily newspapers only.)

Sworn to and subscribed before me this 7th day of August, 1913.
(Seal) CHARLES FRANCEE,

Notary Public in and for the City and County of San Francisco, State of California. (My commission expires January 8th, 1914.)





By R. H. MATTISON, Secretary Exploitation and Industrial Bureau, New Seattle Chamber of Commerce.

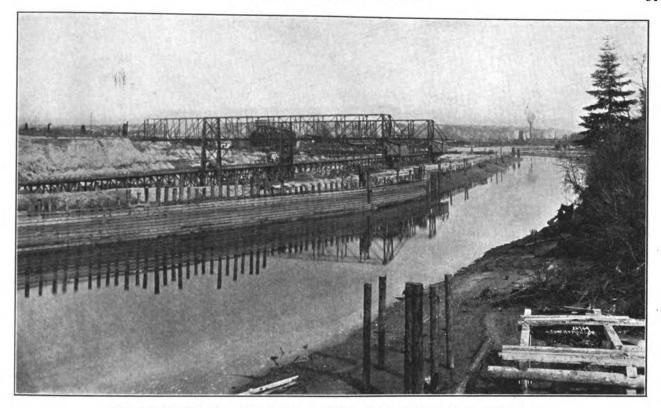
THE sum of \$5,000,000 is being expended for the extension of the wonderful natural harbor of Seattle by means of a ship canal connecting Lake Washington and Lake Union with the salt waters of Puget Sound.

With characteristic foresight and energy the citizens of Seattle are proceeding with this ambitious project, not because of lack of harbor area, but to provide for the immense growth of Seattle's shipping and manufacturing which is expected to follow with the completion of the Panama Canal. The excavation work is progressing rapidly and will be completed several months in advance of the single canal lock which will form the doorway between salt and fresh water. This lock is one of the largest structures of its kind in the world, taking care of a greater tonnage than any other lock in the United States. The canal will increase the harbor area of Seattle from 40 to 140 miles, giving deep-sea shipping facilities to Lake Union in the geographical center of Seattle, and to Lake Washington on the East side of the city within the corporate limits.

These fresh water, non-tidal, non-freezing harbors will have ample depth for the heaviest shipping. Lake Union, one-half mile wide by two miles long, will have a depth of 40 feet, while that of Lake Washington, 30 miles long and from 5 to 10 miles wide, will range from 40 to 200 feet. The locks will have a depth at extreme high water of 42 feet, and of 36 feet at ordinary high water, thus taking care of merchant vessels of the size of the Minnesota when full laden.

The canal will be ready for use not later than July, 1915. It will lower Lake Washington ten feet, bringing it to the level of Lake Union. The expense of the canal condemnation, excavation, etc., is borne by Seattle and King County (and a small portion by the State), while that of the lock construction, amounting to \$2,275,000, is borne by the Government, and the entire work is under direction of the United States Engineers. The canal will be 25 feet deep, 75 feet wide at the bottom and 125 to 150 feet wide at the water surface. The lock site at the Narrows is more than one mile from deep water in Puget Sound. This distance will be enclosed between two breakwaters 250 feet apart, to furnish vessels and log rafts protection from rough water. The depth in the channel will be 31 feet at mean low water below the Narrows, and 36 feet at low water above the lock, extending to deep water in Lake Washington. From Shilshole Bay to Lake Washington the canal will extend about 45,000 feet. The canal runs through the north residence section of the city of Seattle.

In addition to the natural advantages for such a canal provided by the narrow strip of land which alone separates Lake Washington and Lake Union, the indentation of Salmon Bay near the outer section of the canal makes the excavation portion of the project a compara-



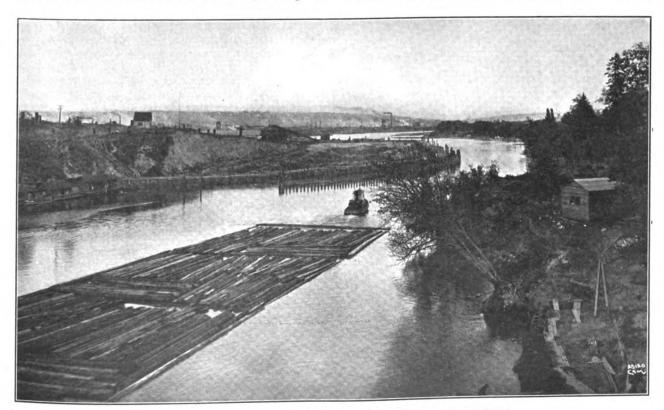
SIDE VIEW SHOWING TWO STEEL CRANES—PART OF CITY IN BACKGROUND

tively small matter. From the lock to Lake Union approximately 537,000 yards of dirt will have to be excavated. Between the eastern shore of Lake Union and the western shore of Lake Washington, a distance of little more than half a mile, 610 cubic yards are being excavated. Through this excavation, access will be given to Union Bay on Lake Washington, which at present is navigable only to small vessels and will require dredging amounting to 390,000 cubic yards.

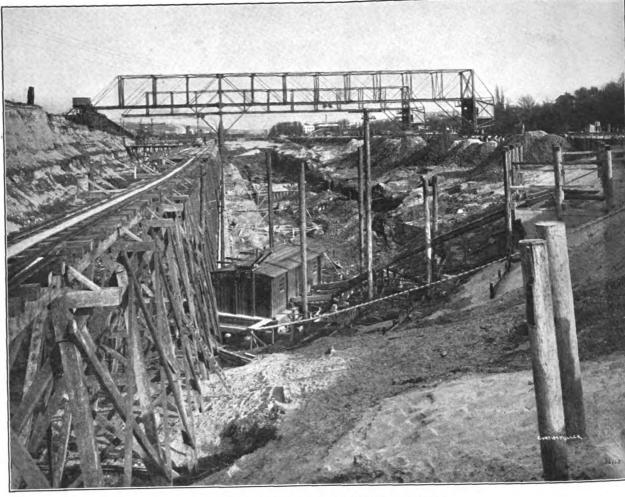
The lock will be of reinforced concrete, having one

chamber 80x825 feet in dimensions, and a smaller chamber 30x100 feet in dimensions. In the large lock the depth will exceed 36 feet for an average of 12 hours daily. In the small lock the depth will be 16 feet for that period of time. The smaller chamber is for the accommodation of the mosquito fleet, pleasure craft, row boats, etc.

The operation of the lock will be very rapid, taking only 20 to 30 minutes in passing through the large chamber and not more than 15 minutes through the



SHOWING COFFER DAM AND EARLY EXCAVATION OF LOCK PIT



INSIDE LOCK PIT, LAKE WASHINGTON CANAL

smaller one. A middle gate in the large lock will divide it into two chambers 350 and 475 feet long, the combination making virtually four locks, 150, 350, 475 and 800 feet long respectively. Double leaf gates will be used in the larger lock and single leaf gates in the smaller lock. The lock lies directly back of and under the protection of Fort Lawton.

Salmon Bay, a natural basin, located just east of the Narrows, will, by the lock, become a deep fresh water area on the same level as Lake Union and Lake Washington. Owing to the immense capacity of these lakes and Salmon Bay, there will be little difficulty in the control of the run-off through the canal from Cedar River and Lake Washington watersheds. It will be accomplished by a concrete dam from the lock to the south shore, 260 feet distance, ordinary flash boards controlling the outflow. These watersheds aggregate 580 square miles and the maximum run-off has been 12,000 cubic feet per second for 24 hours and 3600 cubic feet per second per 30 days. The Government will build bulkheads, pierheads, with lights in Shilshole, Salmon, and Union Bays with tower and light in Lake Washington.

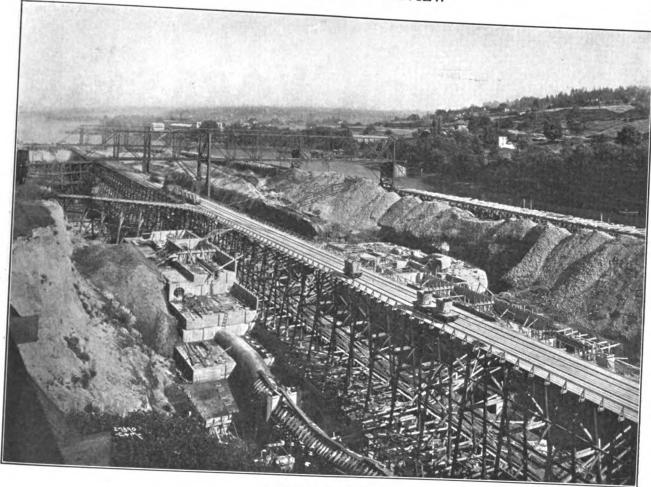
The preliminary work at the locks required 30,000 cubic yards of excavation for a temporary channel during the construction of 26,000 feet of cofferdam. There was 250,000 cubic yards of excavation work in the lock pit. The work of constructing the lock and of excavating the channels now affords a most interesting sight to tourists and other visitors in Seattle.

Not only will the completion of the work obviate

floods in the old Lake Washington and Cedar River watersheds, but large swamp areas now bordering Lake Washington and Lake Sammamish, three miles east of Lake Washington, will be drained and made available for low-priced industrial sites. The problems of the Duwamish waterway and other extensive harbor improvements in Seattle will be greatly simplified by the completion of the Canal. The advantages of a fixed water level in loading and discharging vessels are obvious and to the residents of Seattle the canal will mean a lower cost of living as the result of the saving in drayage cost through the exceptional facilities for city distribution. Freedom from teredoes in fresh water harbors is a great advantage in wharf construction. The action of fresh water on barnacles is also said to be an advantage in attracting ships to Seattle as compared to other competitive ports where no fresh water harbor is available.

The Navy, which has a large station at Bremerton, just across the Sound from Seattle, will undoubtedly utilize Lake Washington as anchorage ground for warships and as an outfitting point for transports and other naval vessels.

In addition to the funds being expended for the excavation and other work, the city of Seattle is spending a large amount for the construction of a steel or masonry bridge of the draw or lift type, having an opening of at least 150 feet and a clearance of at least 30 feet above high water. All pipes and conduits connecting the north with the south end of the city across the canal are being installed in accordance with the regulations of the Secretary of War, 36 feet below mean low



LAYING CEMENT IN PIT

water. Many engineers believe that the great era of Seattle's prosperity will date from the completion of the Lake Washington canal. It will undoubtedly im-

prove Seattle's already superior harbor facilities and will increase the shipping and industries of what is, at present, a well-developed city.

1912 EARNINGS OF SUEZ CANAL COMPANY.

The annual report of the Suez Canal Company is of particular interest now that the Panama Canal is so nearly completed.

The total receipts, as reported at the last general meeting of the Suez Canal Company, for the year 1912 amounted to \$27,005,068, an increase of \$363,692 over the receipts for the year 1911.

The expenses aggregated \$9,211,045, the net receipts amounting to \$17,794,023. The company distributed as dividends \$16,847,540, amounting to \$29.90 per share. The report states that notwithstanding the reduction in the canal tariff the year 1912 was the most prosperous one the company has yet enjoyed.

During 1912 there passed through the canal 5,373 ships, of 20,275,120 net tons. The average tonnage advanced from 3,688 in 1911 to 3,774 tons in 1912. The average time in transit was lowered during 1912 to 16 hours 19 minutes, or 35 minutes less than in the most favorable previous year.

CASEY'S FINISH.

Murphy-What's that in your pocket?

Pat (in a whisper)—Dynamite; I'm waiting for Casey. Every time he meets me he slaps me on the chest and breaks me pipe! Next time he does it he'll blow his hands off.

FURNESS-WITHY PAY 10% DIVIDEND.

Messrs. Furness, Withy & Co., Ltd., last year made profits, including the balance brought forward, of £885,-246 (\$4,426,230) as compared with £768,622 (\$3,843,110) in the previous year. After payment of the usual halfyearly dividends on the preference shares and interim dividends on the ordinary shares at 10 per cent. per annum, an available balance remained of £691,331 3s 6d. The reserves were brought up to £1.000,000 (\$5,000,000).

The property and assets of the company are valued as follows:

Steamships, investments in engine and iron works, shipping, industrial and general investments (less depreciation written off), stocks of stores, etc., and payments on account of new tonnage (less amounts received on account), £1,950,053 18s 7d.

Freeholds, plant and other property in the United Kingdom and abroad (including dock warehouses, wharves, etc.), associated companies, and investments in the Wingate Coal Company, Ltd., Broomhill Collieries, Ltd., Weardale Steel, Coal & Coke Company, Ltd., and Easington Coal Company, Ltd., £2,287,934 16s 11d.

Investment in Irvine's Shipbuilding & Dry Docks Company, Ltd., including the Harbor Dockyard and Middleton Shipyard & Dry Docks, £305,880.

To this total of £4,543,868 15s 6d is increased by other assets to £6,234,835 15s 10d. The company received £8,383 11s 1d in subsidy for postal services.

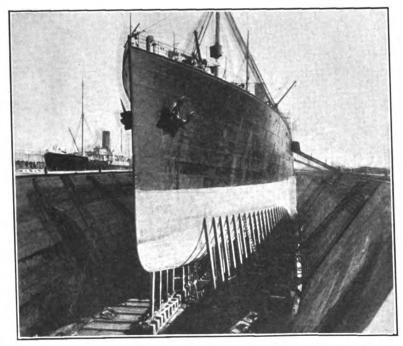
WRITE FOR CATALOGUES

ESTIMATES FURNISHED

Union Iron Works Co.

ENGINEERS and SHIPBUILDERS

LARGEST AND MOST COMPLETE PLANT ON THE PACIFIC COAST



S. S. "MANCHURIA" AND S. S. "CONDOR" IN OUR DRY DOCKS

-LARGEST -

DRY DOCKS

ON PACIFIC COAST

Graving Docks

No. 1. Length, 750'. Width, 103'. No. 2. Length, 485'. Width, 77'.

Floating Docks

No. 1. Length, 301'. Width, 68'. No. 2. Length, 210'. Width, 66'.

No. 3. Length, 271'. Width, 62'.

SPECIAL FACILITIES FOR SHIP REPAIR WORK

MANUFACTURERS OF

Marine and Stationary Engines
Boilers and Auxiliary Machinery
Mining and Milling Machinery
Water Tube and Scotch Boilers
Gold Dredging Machinery

Union Iron Works Co.

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OIL BURNING SYSTEM

ATOMIZES WITHOUT STEAM OR AIR

Steamers aggregating over 350,000 H. P. have been equipped with the system during the past $2\frac{1}{2}$ years.

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THE CALL OF THE ORIENT



Ten times round the deck makes a mile walk.

Who is he that has not at some time dreamed of seeing

JAPAN

and

CHINA

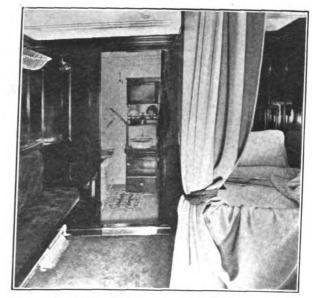
With their quaint old customs and rare old antiques.

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- D. E. Brown & Macaulay, Ltd., 585 Granville St., Vancouver
 C. A. Solly, Agent, 1003 Government St., Victoria, B. C.
 C. G. Krueger, Agent, 517 So. Spring St., Los Angeles, Cal.

JAPANESE STEAMSHIP COMPANIES IN NO HURRY TO PROCEED WITH PANAMA CANAL PLANS

Fluctuations in freights and uncertainties in getting return cargoes are the basic reasons, says the New York Journal of Commerce, for hesitation on the part of several steamship companies in the Pacific trade to decide upon immediate extension of their services upon the opening of the Panama Canal.

Almost every shipping company of note through its managing directors or special agents has in the last twelvemonth made a study of the situation at the Canal and on the Pacific Coast. While opinions are divided on the prospects, there is a strong general feeling expressed that only cautious procedure is warranted. Some proposals made in the first flush of enthusiasm on the part of minor companies and new carriers have not materialized. Others have been checked, as circumstances have not been particularly favorable to ambitious enterprise in the near future.

Immediate Service Unlikely.

It is unlikely as things look at present that the three great Japanese steamship companies, the Nippon Yusen Kaisha (Japan Mail Steamship Company), the Osaka Shosen Kaisha (Osaka Mercantile Steamship Company) and the Toyo Kisen Kaisha (Oriental Steamship Company), will carry out the proposed combination under which they would run a joint direct service between Japan and New York by way of the Panama Canal—at any rate not before the commercial opening of the waterway.

That this service which has for some time been certainly under contemplation, may be deferred, waiting further developments and experience of ships actually passing through the Canal, was intimated to a representative of the New York Journal of Commerce in a conversation with A. S. Mihara, the special traffic agent of the Nippon Yusen Kaisha, now in New York.

Instability of Freight.

"Several factors have to be taken into consideration and a clearer knowledge upon them is necessary before it can be decided definitely whether the Nippon Yusen Kaisha and the other Japanese lines will use the Canal immediately on its opening. The Nippon Yusen Kaisha is a freight line, to a very large extent, and it must be remembered that for maintaining a regular service profitably there must be good cargoes both ways. But this is not assured in the Pacific trade and the instability of rates is one of the conditions which will deter our company from embarking on a new undertaking too quickly. The cotton movement, at the beginning of the year, was a warning, as there was a congestion of cotton at southern Pacific ports and not the tonnage to carry it profitably to the Orient. During the summer freights have been reduced for the export of flour and lumber from the north Pacific ports, but have now been restored. Wheat and flour were handicapped by unusually high charter rates last year, and as a result the exports fell about 60,000 tons short of the previous year. This year it is believed that there will be plenty of tonnage available, and at much lower rates. Uncertainty of rates will make the companies maintain a cautious policy.

No Certainty Yet as to Opening.

"Then there is the uncertainty about the opening of the Canal. The engineers say it will be ready for use by commercial ships about the beginning of 1915, but who can speak positively about the passage of a ship through until it has been actually accomplished?

"But contracts between New York and the Oriental

shippers have to be made a long time ahead. The merchants must be guaranteed that their freight will be carried through and until the first ship has been actually engaged and accomplished the voyage we are without actual experience. Look at the figures in the 'Canal Record' of the progress of the work and the amount still to be finished. No one can tell for six months yet whether the waterway will be ready for regular sailings at the date predicted, and there is no basis as yet on which to fix contracts for the carriage of goods.

No New Originating Trade.

"Another thing one must keep in mind is that in direct trade between New York and the Orient by way of the Panama Canal there is no new trade to be utilized at once. Any trade that passes along the new route will only be a diversion from the existing routes, by the Pacific Coast ports and the transcontinental railroads or by Suez. There is no advantage over the Suez route except from New Zealand, perhaps. The Japan and Seattle ocean track will still be the shortest and the railroads may reduce their rates to meet any lower rates due to all-the-way-water transportation, though that may take much longer. The silk freight is not likely to be diverted as it might deteriorate. There will be then no new originating Orient trade to come here which does not now find its way by existing routes. You will not get more food or clothes from China and Japan because of the opening of the Canal. With the South American countries it is different, and the new route will open up fields of trade that have now no inter-communication. In time the canal may be used for freight coming from or going to the Orient as trade develops in natural course, but this will probably take years before it reaches a large traffic."

The Question of Subsidies.

The financial factor, it is considered in other quarters, may influence the directors of the Japanese companies. The Government of Count Yamamoto, which succeeded that of Prince Katsura, pledged itself to rigid economy. This may affect the shipping subsidies which will shortly expire, though the budget provided for large expenditures for the mercantile marine of Japan. Twelve fast modern boats would be necessary to carry on a weekly service, and without substantial help from the Government and payment on the mileage run basis, as they would not be mail boats, it is difficult to see where the capital at present could be readily obtained on the promise of renumerative investment.

THE NEW NORWEGIAN-AMERICAN LINE.

The new Norwegian steamer Kristianiafjord recently arrived at New York on her maiden trip, thus marking the establishment of the new direct steamship line between Norway and America.

The Kristianiafjord was built by Cammell, Laird & Co. of Birkenhead, Eng., and has a gross tonnage of 10.625 and 6,518 net. She has accommodations for 130 first cabin, 240 second cabin and 700 steerage passengers. On her trial trip she developed a speed of 17.40 knots, and the showing made on her first trip to New York, when she averaged 16½ knots, was most satisfactory in every particular.

The Bergensfjord, a sister ship to the Kristianiafjord, was launched in April last and will be completed so as to take her place on the line in September.

Messrs. Benham & Boyeson are agents of the new line at New York.



JAPAN'S TRADE WITH AMERICA.

The American trade represents 23 per cent. of the whole of Japan's foreign trade, but if the export trade alone is considered, the percentage rises to 32 per cent. In 1902 America's exports to Japan represented only 4 per cent. of her whole export trade, England being then Since 1911 America's exports to her best customer. Japan have increased by leaps and bounds and in respect of the rate of increase Japan stands third on the list at present, the first being England, while the second is Cuba.

Of America's customers Japan stands tenth or eleventh, the rate of growth of trade relations between America and Japan being very slow as far as America's exports to Japan are concerned, while Japan's export trade to America continues increasing rapidly.

Among Japanese goods which have rivals on the American market are numbered raw silk, habutae and other silk tissues, tea, braid, sulphur, camphor and woodenware. The Japanese raw silk import, however, accounts for 65 per cent, of the whole consumption of the States.

Of the import of tea 52 per cent. comes from Japan, the remainder being supplied by China and Ceylon. It is to be further noted that the American taste is now changing from green tea to black.

The export of habutae has decreased about thirty per cent, in the last ten years not owing to a decrease in the demand in the States, but to the development of America's weaving industry, coupled with the high tariff imposed on habutae and the importation of cheap tissues from Switzerland, China and Germany. An improvement in quality, however, should help to recover the

As for sulphur, the Japanese product enjoys the largest market, though it is reported that sulphur of good quality is now being produced in the States.

Figured mattings were exported to the States in 1902 to the total value of six million ven. In 1911 the total value sank almost to half, gradual depreciation of quality, the change of fashion, and the appearance of rivals being counted among the reasons.

O. S. K.'S SEMI-ANNUAL REPORT.

The Osaka Shosen Kaisha send us a copy of their financial report for the six months ending December 31, Among the many services of this company is their Trans-Pacific service between Puget Sound and Japanese ports on which the steamers "Seattle Maru," "Tacoma Maru," "Mexico Maru," "Panama Maru." "Chicago Maru" and "Canada Maru" are operated. These ships connect with the Chicago, Milwaukee and Puget Sound Ry. Co. at Tacoma and Seattle.

We extract the following from the financial report above referred to:

	Yen.
Profit for this term	2,805,948.96
To Insurance fund (slightly over	
5% per annum on the reduced	
book value of fleet) 457,000.00	
To Repair fund (slightly over 6%	
per annum on the reduced	
book value of fleet) 548,000.00	
To Depreciation on fleet (slightly	
over 5% per annum on the cost	
of fleet)	
	1,658,000.00

Net profit	
To Directors' and Auditors' fees 57,500.0	
Balance	
To Dividend Equalization Fund To Dividends (9% per annum)	2,368,404.49 1,500,000.00 742,500.00
Amount carried forward to next term	125,904.49

STEAMSHIP LINES SUBSIDIZED BY THE JAPA-NESE GOVERNMENT.

Referring to the financial accounts of the steamship companies subsidized by the Japanese Government, the Mercantile Marine Bureau, Department of Communications, has the following in their annual report, just issued, for the fiscal year 1911-1912:

Subsidized Concerns.

Coming to the financial accounts of the subsidized companies and corporations, the Nippon Yusen Kaisha's 26th yearly balance (October, 1910, to September, 1911) showed: receipts 28,120,599 yen, disbursements 23,724,397 yen, and net profit 4,396,202 yen. Compared with the preceding year, the figures were more by 634,894 yen in receipts, by 189,275 yen in disbursements, and by 345,-619 ven in net profit.

The Toyo Kisen Kaisha earned during the year 7,462,-199 yen, disbursed 6,745,626 yen, and profited 716,573 yen. Compared with the preceding year, the company's figures showed an increase of 947,943 yen in receipts, of 1,309,931 yen in disbursements, and a decrease of 361,988 ven in net profit.

As for the Osaka Shosen Kaisha, its receipts during the year were 16,080,293 yen and disbursements 14,127,-471 yen, with net profit amounting to 1,952,822 yen. Compared with the preceding year, the company's figures showed an increase of 1,829,734 yen in gross earnings. of 1,117,411 yen in expenditure, and of 712,323 yen in net profit.

As for the Nisshin Kisen Kaisha (Japan-China Steamship Co.), its fifth yearly figures (April, 1911-March, 1912), show that it earned 2,996,300 yen, against expenses of 2,410,251 yen, while realizing a net profit of 586,049 yen. In comparison with the corresponding figures for the preceding year, there were an increase of 171,648 yen in receipts, of 149,079 yen in disbursements, and of 22,569 yen in net profit.

The Tokyo Kaijo Hoken Kaisha (The Tokyo Marine Insurance Co.), in the year 1911 earned 9,027,109 yen in gross (including the balance of 6,535,231 yen carried over from the year preceding), expended 1,122,819 yen, and gained in net 7,904,290 yen.

The account of the Nippon Kai-in Yekisai Kai (The Seamen's Aid Society of Japan), for the fiscal year received 282,968 yen and disbursed 219,152 yen, with a net gain of 63,816 yen. Compared with the preceding fiscal year, the figures showed an increase of 21,231 yen in receipts, of 772 yen in expenditures, and of 20.459 yen in net profit.



FREIGHTS AND FIXTURES.

Messrs. Page Brothers, ship and commission brokers of San Francisco, send us their regular monthly freight report, compiled especially for the "Pacific Marine Review," and which contains the following:

August 26, 1913.

Since our last review, July 25, the freight market has been easier, which was to be expected, as the arrival of the U. S. colliers was heavy during August and will be also in September. It is expected, however, that with the near approach of the time when the harvesting is finished and the grain begins to move, that much activity will result, with probably better rates for October, November and December loading. No charters have been made from San Francisco to Europe since the "Danguay Trouin" at 39/. for barley, but a large American ship, "Wm. P. Frye," has just been taken for barley to New York for immediate loading by Balfour, Guthrie & Co. The rate of freight we have, however, been asked not to divulge. From the north we have to report Str. "Bellucia," by Portland Flg. Mills Co. at 38/9 St. Vincent for orders U. K., etc., with an option of 17/6, with wheat or flour to three ports in Japan. This vessel just arrived here with coal.

Br. Bark "Birkdale" now just leaving West Coast, S. A., in ballast, was taken by Hind, Rolph & Co. at 41/6. Cork U. K. etc.

Str. "Coila" chartered by Portland Flg. Mills at 39/. U. K. etc., and after a fortnight's cessation in chartering, Kerr, Gifford & Co. took the Str. "Spithead" at 37/6 grain to U. K. etc., at which rate we quote the market to-day, though as low as 35/. was done by one of the regular liners from Puget Sound to a direct port U. K. satisfactory to the steamer.

Str. "Arrino" fixed by American Trading Co. at 4/6 on D./W. delivery Puget re-delivery Newcastle/Piric Range. The last charter previously was "Artemis" at 4/9 by the same firm, delivery San Francisco, same re-delivery.

"Strath" steamer was also chartered by them at 5/. delivery north, re-delivery Newcastle/Pirie Range.

Str. "Boveric," now about due in Australia, has been taken by Davies & Fehon at 5/9 on D./W. delivery Newcastle for one round voyage to this coast and return to Australia.

Str. "Foreric" done at 5/. Delivery north, re-delivery China. Prompt loading by Robert Dollar Co.

Str. "Craighall" taken by Portland Flouring Mills at 18/6 from Portland, wheat and flour to two ports in Japan. This, of course, is per ton of 2240 lbs. gross weight delivered.

Str. "Persiana" chartered for a cargo of Japanese ties for the Santa Fe Rwy. Co. at San Diego by Messrs. Sale & Co. of London at about 4/, to 4/3 on time charter. She will load in Japan in September.

Str. "Indraisadi" brings a cargo of sugar and some 500 tons of copra during September from Philippine ports to San Francisco. Terms private.

"Strath" steamer chartered by Hind, Rolph & Co. at 5%, on D./W. Delivery north, re-delivery Newcastle/Pirie Range.

Rates on sailers for the West Coast have dropped from 50%, per M. to 45%, at which price several have been fixed to load from usual loading ports up north. Two handy sized schooners have been fixed to carry redwood from Noyo to a port in Peru at 55%. This apparent discrepancy in rates is because our schooners carry about 25 per cent, less of redwood than of fir.

To Australia, schooners have been fixed as low as 41/3, Sydney or Newcastle, with 10/. per M. ft. additional to Melbourne or Adelaide, and about 47/6 Brisbane, and to New Zealand 50/. has been paid.

Messrs. Comyn-Mackall have taken "John C. Meyer" from Portland to either Shanghai, Hongkong or Kiachau at \$9.50 per M. The first sailer done for a long time to China.

Two or three sailers have been fixed (, Africa on a basis of about 75/, as an average, and to England ship "Marlborough Hill" has been chartered at 83/9 to a direct port.

The above rates on sailers are practically the market to-day, with a slightly easier tendency.

CHARTER OF S. S. "PERSIANA" CANCELED. SUBSTITUTED BY S. S. "MESSINA."

The steamer "Persiana," which had been fixed by Messrs. Sale & Co. of London, for a voyage from Japan to the Pacific Coast, destination San Diego, is to be substituted by the S. S. "Messina," which is to leave Muroran and/or Kushiro, Japan, sometime in October.

The "Messina's" cargo will consist of a shipment of railway ties and lumber, consigned to Messrs. Wheeler, Elder & Elder, of Los Angeles, for delivery to the Atchison, Topeka & Santa Fe Railway Company.

SHIPPING AT VANCOUVER, B. C.

Tender forms and specifications have been issued by the Dominion Government at Ottawa for the construction of a public dock between Salisbury and Commercial Drives in Vancouver, on Burrard Inlet, the estimated cost of which will be \$500,000. The dock will be of reenforced concrete with a concrete superstructure, having a length of 800 feet and a width of 300 feet.

Plans and specifications of this dock have been received at our office and we will be glad to forward same to any of our readers who are interested.

Our Vancouver correspondent, under date of August 4, sends us the following:

The Harrison S. S. "Candidate," after a stay of about four days, during which she discharged about 2000 tons of cargo from the U. K., at the Johnson Wharf, left on Saturday, the 2nd instant, for San Francisco.

The Maple Leaf Liner "Celtic King," having completed her discharge of steel rails, etc., at the Evans. Coleman wharf, left on Sunday evening, the 3rd inst., for Comox, B. C., to coal, after which she will proceed to Tacoma, Seattle and San Francisco, to load for U. K. ports. The "Santa Rosalia" is the next Maple Leaf Liner, due inwards September 20th.

The battle cruiser "New Zealand," the "gift" warship from the Colony of that name to the British fleet, left Vancouver on Monday morning at 6 o'clock, proceeding to Victoria, where she will remain until Saturday next, the 9th instant, after which she will proceed to Mazatlan and ports on the west coast of South America.

The Blue Funnel steamer "Bellerophon" is due to arrive in Vancouver, from Victoria, on Tuesday night, the 5th instant, with about 5,500 tons of cargo from the East and the United Kingdom. The previous Blue Funnel steamer, the "Talthybius," brought about 5,000 tons cargo. The Blue Funnel steamers discharge at the Evans, Coleman dock.



A STEP IN THE RIGHT DIRECTION

On April 7 last, the Foreign Trade Department of the San Francisco Chamber of Commerce called to the attention of the Secretary of the Navy the fact that the Island of Guam is practically without means of communication with this coast and is dependent upon irregular service of Japanese schooners to market the products of the island.

The Foreign Trade Department is now informed that after December 31st proximo, foreign vessels will not be allowed to enter the port of Guam, thereby removing from that island its one source of marketing its products.

The Department is further informed that the improvements under way by the United States Government, which employed practically 25 per cent. of the natives, are nearing completion and the natives heretofore earning a livelihood from this work are returning to their ranches and will be dependent upon the products of the soil for a living.

In a letter under date of August 18, the Foreign Trade Department has again taken up this important matter with the Secretary of the Navy, emphasizing that by furnishing adequate transportation facilities between San Francisco and Guam, the production of copra, coffee, cocoa, cotton, Bech-de-mar, tobasco peppers and other products will be greatly stimulated and while affording the population of the island an opportunity for prosperity, will at the same time materially benefit the importers and exporters of San Francisco, which is the natural market for the Island of Guam.

In the previous communication, the department suggested that the United States Army Transports plying between San Francisco and Manila call at Guam on their return trip and transport the products of the island to San Francisco, but was informed that the difference in distance was too great and would entail a considerable expense which the tonnage to be transported would not justify.

Extracts from the letter recently written the Secretary of the Navy follow:

"The Department understands the present route of the transports is from San Francisco to Honolulu, thence to Guam and from there to Manila, a distance of 6929 nautical miles. That the return trip is from Manila to Nagasaki to coal and from Nagasaki to San Francisco direct, a distance of 6340 miles. That to return from Nagasaki to San Francisco via Guam would make an additional distance to steam of approximately 1459 miles. It is also the understanding of the Department that these transports coal at Nagasaki for the round trip.

"After going into this matter very carefully, it has occurred to the Department that a practical solution to this problem would be for the transports to return from Manila to San Francisco via Guam, eliminating Nagasaki, but to do this the question of fueling would have to be taken into account.

"If the transports were transformed into oil burners, not only would the matter be satisfactorily adjusted so far as the natives of Guam and the merchants of San Francisco were concerned, but the United States Government would make a considerable saving in money and materially assist in developing one of its Pacific island possessions which at present seems threatened with practical disaster.

"Allow us to suggest that the use of fuel oil in steamships is no longer an experiment; it is being adopted by ship owners of many countries and by governments in vessels of war. This Government, we are informed, is rapidly adopting the use of oil in the vessels of the navy,

and undoubtedly would not have done so without exhaustive and satisfactory tests.

"Should this suggestion be adopted, allow us to point out a few of the advantages that would accrue according to the information we have at hand:

"1. Fuel oil is cheaper than coal. With the latest fuel burning appliances, exhaustive tests have proven that three and a half barrels of oil are equal to one ton of coal and the present price of oil in this port in large lots is 80 cents per barrel. To equal this, the price of coal would have to be \$2.80 per ton, and we are informed that even in Japan good coal can not be purchased for much under \$3.20 per ton. In addition to this it is generally admitted that coal deteriorates by slacking and shrinkage fully 5 per cent., whereas oil does not.

"2. A considerable saving can be made in wages, as oil does not require as many coal passers and stokers as coal, and as one ton of oil is equivalent to two tons of coal in weight, more space is available for cargo pur-

"3. By purchasing oil in this city, a large revenue would be received by American industries that is now paid out to a foreign country without benefit to the United States.

"4. As it would be unnecessary for the transports to enter a foreign harbor, no port dues and other port expenses would be incurred outside the possessions of the United States.

"5. As we are advised the shipments of copra would soon reach from six to seven thousand tons a year and as the present rates of freight are about \$6.25 per ton, the transports would earn a revenue for carriage amounting to about \$40,000.00 per annum on copra alone, and the other commodities would contribute considerably.

It would enable the natives of Guam to find a "6. profitable market for their products and encourage them to still further increase them, at the same time opening up a profitable business for the merchants of this city and eventually the traffic might increase to a point where private capital would be sufficiently interested to establish a regular line.

"We respectfully commend this to your careful consideration, trust you will cause the matter to be investigated to verify the claims herein set forth."

CONSIDERABLE GROWTH IN U. S. COMMERCE.

The fiscal year ending June 30, 1913, was the banner year in the trade of the United States with foreign countries, the total trade exceeding \$4,275,000,000 and surpassing the total trade of the fiscal year 1912 by Imports into the United States in over \$421,000,000. the year exceded \$1,812,000,000, and exports from this country exceeded \$2,465,000,000, making a balance of trade in our favor of over \$652,900,000. The imports surpassed those of the fiscal year by over \$159,700,000, and the exports were more than \$261,500,000 greater than those of last year.

A JEWEL REVEALED.

"Your husband is willing to allow you the custody of the automobile, the poodle and the rubber plant, with liberal alimony, while he takes the children and the graphophone."

"Stop the divorce," sobbed the wife. "I'll never get another husband like that."-Louisville Courier-Journal.







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We have received a letter from the Hon. C. F. Curry, Member of Congress from the Third California District, which letter was written when the Secretary of the Navy was on the coast inspecting the various navy yards.

The statements of Mr. Curry regarding the value of the Mare Island yard are fully sustained by the views expressed here by Secretary Daniels, and there appears to be no doubt but that the Mare Island yard will be maintained in the highest degree of efficiency.

Whether or not a drydock should be located there rather than on the shores of San Francisco Bay is a question that, should a drydock be authorized, must be settled after careful deliberation.

Mr. Curry, like Secretary Daniels, is heartily in favor of a merchant marine flying the United States flag, and promises to do what he can with that end in view. In this regard Mr. Curry occupies a different position from that of Secretary Daniels. The Secretary can use his influence and can advise, but he can do only that which the statutes as passed by Congress permit him to do. Mr. Curry, however, is a part of the law-making body, that body which prescribes the limits within which the Secretary may exercise his discretion. Mr. Curry can advise and use his influence and he can also vote on the bills as presented. That he will use this prerogative in favor of a greater navy and of some method whereby the merchant marine may recover the position it once held is very evident from the tone of his letter, but the attitude of the present Congress, with regard to legislation with respect to both subjects, does not hold out much encouragement for a successful issue.

The award last month to a Japanese line for the carriage of transpacific mails is but one more instance of the utter stupidity and lack of patriotism exhibited by our law-makers. The Japanese line is subsidized by the Japanese Government, and for this reason can and did underbid the line flying the stars and stripes. For some time the various Congresses have shied at anything which savors of subsidy and possibly it was considered that the few dollars difference between the two bids might be considered as of the kindred of subsidy, and for that reason the Japanese line, with no better service, is given the award. Economy, both public and private, is a grand thing, but many are the sins which are committed in its name. The letter from Mr. Curry follows:

"Until recent years the idea of building Government ships in Government yards was ridiculed by the Trades Journals, discouraged by the Navy Department and given very little consideration by Congress. That attitude has gradually changed and at the present time the Navy Department's expressed determination to use to their capacity the splendidly equipped navy yards for the purposes of the Navy, including the construction of battleships, meets with the approval of Congress, of the People and of the Press.

Mr. Daniels is now on the Pacific Coast inspecting the navy yards at Bremerton and Mare Island and examining available sites for the location of a drydock. Later in the year Assistant Secretary of the Navy Roosevelt also intends to visit the Pacific Coast yards. Their visits will undoubtedly be of great benefit to the yards, and incidentally to the Government.

The location of Mare Island, at the mouth of the Napa River, opposite the City of Vallejo, is undoubtedly the very best site on our Pacific Coast for a navy yard. It is situated in the best harbor on the Pacific Ocean, just across the bay from San Francisco, the great commercial, financial, manufacturing and shipping metropolis of the Pacific, and the harbor and railroad development being prosecuted on the east side of the bay will add to its strategic value.

In time of war it will be safe from attack from outside the heads, and could only be in jeopardy in the event of a hostile fleet being in possession of the bay. The Government has fourteen hundred acres of building site, with a waterfront of an ample depth on its operative line for the accommodation of the largest ships and, being inland, is free from the destructive elements found in salt water.

Some objection has been made to Mare Island on account of the shallowness of the channel. That objection is untenable. I have had the channel question up with the Army and the Navy Departments several times since I came to Washington. At my last interview with the Army Engineers I was assured the work of deepening and maintaining the channel would be vigorously prosecuted by the Government, that commercial necessity would demand and justify it even if the navy yard had not been located there.

That the work already done on the channel has been effective is evidenced by the fact that on the 27th of March of this year the "California," drawing 27 feet of water, was launched, after being overhauled, and left the yard without any difficulty whatever. There is only one navy yard in the United States that has a deeper channel approach than has Mare Island, and much more money has been spent in dredging the channel to that yard than to Mare Island.

In my opinion the proposed Government drydock ought to be located at Mare Island. Only in case of being badly damaged in battle or collision will a battleship ever draw as much as 40 feet of water, and in that condition it would be hard to get her into any stationary dock wheresoever located. And if a battleship were wounded in a battle outside of the Golden Gate it would be quite an undertaking to bring her over the bar if she drew over 40 feet.

In addition to a stationary dock a floating dock might be built. The floating steel drydock "Dewey," built in the East and sent out to Cavite, cost \$1,124,000.00 and will lift 16,000 tons. A few of our larger battleships displace too much to be lifted by this dock.

The addition of a drydock, a paint shop and a few minor improvements and rearrangements would make Mare Island the model navy yard in the United States.

As it is she is adequately equipped to build a battleship, and her executive officers and mechanics are second to none in the world. The climate is ideal and makes it possible for a man to work without discomfort from heat or cold every week in the year.

Better work at less cost to the Government is turned out at Mare Island than at any other Government or private shipbuilding yard in the country. The collier "Vestal," built at the New York navy yard, cost \$60,000 more than her sister ship "Prometheus," built at Mare Island. The training ship "Cumberland," built at the Boston navy yard, cost \$10,000 more than the "Intrepid," built at Mare Island. Two steel targets built at the Norfolk navy yard cost \$5,000 more than similar targets built at Mare Island, and, as a further evidence of the quality and economy of the work done there, the repairs on army transports, revenue cutters and Fish Commission boats are frequently awarded to the Mare Island yard.

If given the opportunity Mare Island will build a battleship that will be the pride not only of California, but of the Nation, and she will build it as cheaply as it can be built in any yard in the country. If we all work with that object in view I believe she will be given the opportunity.

A few months ago the yard was inventoried and appraised at nearly \$12,000,000.00. In addition to determining the value of the plant, the inventory proved it to be one of the best equipped yards in the country.

It would be nothing but common sense business judgment on the part of the Government to use its navy yards to their capacity before awarding contracts to private yards when the navy yard bids and estimates are as low as those of private yards, and they usually are. Even though it should continue to be the policy of the Government to award the building of some of its ships to the private yards, navy yard competition would keep the bids and contracts for construction in private yards down to a minimum that would only permit of a reasonable profit, and in the time of war or threatened war, the Government would not be at the mercy of the private ship-building yards. Of course, to make navy yard competition effective at such times, it would be necessary for the Government to own and operate an armor plate plant with an output capacity sufficient to manufacture at least one-half of the armor plate necessary for the Government's use.

The Spanish-American War made the United States a world power. The construction of the Panama Canal will compel the United States to assume the position of the world power, at least so far as the Atlantic and Pacific shores of North and South America are concerned, if we intend to maintain the Monroe Doctrine and determine to control and operate the canal in our own way, primarily for our own benefit, and not give way to the unreasonable requests and demands of certain European Nations, that our interstate coastwise commerce be not permitted to pass through the canal toll

The canal is being built by the American Government, with American money, primarily for the American people; when completed it will be part of our coastwise shipping route, and no other Nation on earth should be permitted to dictate our governmental policy toward our domestic shipping. If we are to maintain our rights we must have an adequate and efficient Navy.

During the debate in Congress in favor of the construction of the Canal, the argument was used that the canal connecting the Atlantic and Pacific and bringing our two coasts so close together would obviate the ne-

cessity for materially increasing our Navy. That argument was without foundation in fact. The completion of the canal will make it necessary for us to maintain a larger and more efficient Navy than ever; for the opening of the canal will be followed by a material development of the Pacific Coast in population, commerce, manufactures, mining and agriculture unprecedented anywhere in the history of the world, and will necessitate our maintaining an adequate and efficient squadron on each coast. The possession of an efficient Navy by a Nation is a good investment as an insurance against war. more often prevents war than it is used in battle.

Should our Government fail or be destroyed, liberty would soon cease to exist on the earth.

We need an efficient Navy, not for conquest, but for self-protection. The ships of the Navy, when practicable and possible, should be built in the Government It is practicable and possible to build a battleship in the Mare Island navy yard. It ought to

Of almost equal importance with her Navy is a Nation's merchant marine. It is the shame of our Nation that her merchant marine is a negligible quantity in the ocean-carrying trade of the world. Nearly all of our international commerce is carried in foreign ships. The American flag on a merchant ship in a foreign port is This ought not to be so. I have been appointed a member of the House Committee on Merchant Marine and Fisheries. As a member of Congress I shall advocate remedial and constructive marine legislation and shall do what I can to assist in the passage of laws to help the American merchant marine to again become a power in the transoceanic carrying trade of the world.

(Signed) C. F. CURRY."

DEMOCRATIC LEADER OF HOUSE FAVORS UP-BUILDING OF OUR MERCHANT MARINE.

Oscar W. Underwood, Democratic Leader in the House of Representatives and Chairman of the Committee of Ways and Means, under date of August 12, writes the Pacific Marine Review:

"I am in receipt of your favor of the 7th instant, enclosing me copy of editorial from the Pacific Marine Review. I thank you very much for calling this matter to my attention. I am earnestly in favor of building up our merchant marine and hope some start in that direction may be made at an early date."

H. M. S. "NEW ZEALAND" AT VANCOUVER, B. C.

The battle cruiser H. M. S. "New Zealand" passed through Vancouver Narrows shortly after 3 o'clock on Sunday, the 27th of July. She received a most enthusiastic reception from the multitudes crowded on the shores in Stanley Park. The weather was at its best and the inspiring strains from the bands both on ship and shore lent great animation and effect to the scene. One would have thought that all Vancouver had left the city and gone out to the headlands to catch the first glimpse of the incoming warship with her setting of accompanying steamers. A sight of the crowd, however, that had gathered in the vicinity of Coal Harbor, where the vessel shortly afterwards dropped anchor, would have corrected this impression. New Zealand bunting was much in evidence about the city, and the officers and crew had a good time doing the sights.



WHY CAN'T THE ESSENTIAL BE HAD?

The S. S. "State of California" with a lamentable loss of life adds another to the list of the many vessels lost or damaged in Alaskan waters.

'Sufficient Aids to Navigation in Alaskan Waters" has been the cry for many years and while something has been accomplished along these lines, there is still much to be done.

On a trip to Alaska it is very noticeable indeed that as soon as a vessel leaves the British Columbia Coast one no longer sees the many and various kinds of lights and buoys. The Dominion Government has spent a good deal of time and money in protecting the coast of British Columbia but the United States Government has not shown the proper interest in assisting vessels to navigate Alaskan waters.

Under date of July 9, Captain E. L. McNoble, superintendent of the Pacific Coast Steamship Company, sent a letter to Mr. R. L. Hankinson, lighthouse inspector, Sixteenth District, Ketchikan, Alaska.

This letter was written with a view to obtaining better protection for vessels navigating the waters of Southeastern Alaska. The aids to navigation requested are necessary and of extreme importance, especially now that the loss of life in these dangerously unguarded waters has again resulted from neglect in properly safeguarding such narrow and intricate channels that shipmasters in this service have to contend with.

Captain McNoble in his letter gives the list of aids to navigation needed and their exact location. Extracts from the letter follow:

BURNETT INLET.

"If my memory serves me right you stated you were experimenting with a floating light in Wrangell Narrows, and were of the impression that the light would be a success, but that you were afraid it would not work in Burnett Inlet. If you are still of that opinion, what sort of a light shall we recommend to be placed inside the reef to aid the vessels in making the turn before approaching the cannery dock? This port of call is on the direct route and is made by our passenger vessels, which are required to make the inlet night or day, whichever the case may be. Our masters report that if a floating light were established just outside the reef it would be possible to make this landing at night, but without this light they do not consider it a proper place to make.

POINT ELLIS REEF.

The industries on Pillar Bay have grown to such an extent that they require the services of our passenger steamers to make this port of call, and as our schedule, as you know, will not permit of a delay at any time we are forced to pass this port of call whenever the vessels would arrive there at night, as the masters will not enter past this reef after dark. We, therefore, request that the light be placed on the reef designating the shoal, and that a buoy be placed on the outer edge of the reef in the sounding of 51/2 fathoms. The light will then act as a guide to the entrance of the bay and also warn the vessels of the proximity of the reef. A buoy placed on the outer edge of the shoal will make the navigation of this bay perfectly safe at any time.

KAKE.

We request that a light be placed on the island abreast of the cannery wharf, the light to be used as a guide for vessels entering this port at night. Having it placed on the island opposite the cannery would make it plainly visible to the masters of the vessels after round-

ing Point Mccartney and straightening up on their course to go into the inlet. This port of call now requires the services of our regular passenger vessels, and as it is close to the direct route we would be pleased to give them direct service, but cannot do so at present on account of the possibility of the arrival of the vessels at this point at night. As soon as the light is established we can give the service required.

WEST COAST OF PRINCE OF WALES ISLAND.

I have marked on the chart the different places where buoys are required from present information at hand. As you are aware the survey of these waters is not completed, and it is not unlikely that when we hear from the Coast and Geodetic Survey we will require more aids to navigation than requested in this letter. On account of the trouble various vessels have encountered in the past few months in navigating these waters the aids requested would materially decrease the danger.

No. 1, Curacao Rock, has been discovered to have but 6' of water covering it at mean low tide. No. 2 is a shoal in San Christoval Channel reported to have 18' at low water. No. 3 is the end of reef that jets out from Hermagos Island, which had but 4' of water covering it. This reef was touched by the "Curacao" two trips previous to the one on which she was wrecked and is almost on the direct course of vessels navigating these waters. On account of the contracted area in which vessels are compelled to navigate, it is most essential that the masters and pilots have a guide showing the end of the reef, so they may pass close to it without endangering their vessels.

No. 4 is Fern reef, the center of which is out of water, but as the reef is very large it requires very close navigation to enable a vessel to pass between this reef and Balandra shoal, No. 5, which is not out of the water and a large area. Vessels are compelled to go between these two reefs on their regular course through these waters. A buoy on the inner edge of each reef would make navigation perfectly safe at all times.

No. 6 is a rock at the lower end of Tlevak Strait, which is on the direct course when entering or leaving Rose Inlet, a port of call which is required to be made by passenger vessels. Knowing the existence of this rock and that it has but 6' to 12' of water on it at low tide compels our masters to make a large detour to insure themselves of the perfect safety of their vessels, but when buoyed this port will be easy of access.

No. 7. A shoal with 12' of water at low tide, found in Rose Inlet. Those interested and doing business on this bay have at present a barrel buoy on the rock, previously found by a vessel while entering the inlet. The last shoal was found by one of our vessels while navigating waters which were supposed to have a great deal more depth than was found by the steamer.

When you have found time to take these recommendations under consideration please let me hear from you regarding what you think can be immediately done. You are acquainted with the importance of having the aids that I have recommended. If we have a preference it would be to have Curacao Rock buoyed, also the floating rock at Burnett Inlet, and a buoy at No. 3, which marks the end of Hermosa Reef."

Can't something be done by the United States Gov ernment to avoid further loss of life and property? Alaska will some day come into her own but in the meanwhile why not allow her to have the necessary protection?



THE OCEAN MARINE INSURANCE CO., Ltd. THE LONDON ASSURANCE CORPORATION

(MARINE DEPARTMENT)

H. M. NEWHALL & CO., General Agents

T. S. DEERING, Underwriter

NEWHALL BUILDING

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COST OF LABOR TROUBLES AND GENERAL AVERAGE

The numerous strikes and recurrence of labor troubles among dockmen in various English ports during the past year or more have started a new idea in the way of apportioning the losses accruing so that this burden will not be heavy on any particular interest. From a recent issue of the "Shipping Gazette Weekly Summary" it is learned that certain shipowners have put forward a proposal that the cost of labor disputes should be made the subject of general average and that all interested shall contribute.

It is argued, to quote from our exchange, that in event of dislocation of trade through strikes, certain steps have to be taken for the benefit of all concerned in the venture. Therefore it is urged that it is only reasonable that all should contribute.

It is not urged that contribution shall be made on values, as general average expenses and sacrifices usually are, but it would appear the proposition is that half of the costs of the special expenses shall be borne by the ship and half by the cargo apportioned on the weight or bulk as this is usually the best criterion of the additional labor involved.

While this proposition is not likely to meet with the approval of underwriters yet sufficient influence was back of it to induce the Institute of London, Liverpool and Manchester Underwriters to consider it seriously.

It is difficult to see how marine underwriters are interested in a loss arising from either a strike or a lock-Marine insurance is primarily a contract for indemnity against loss arising from perils of the seas and certain kindred losses especially provided for in the policy of insurance. It is quite true that delays resulting from strikes among longshoremen which delay the loading of cargo result in loss to the shipowner by reason of the loss of time and also to the cargo owner by reason of loss of time on the delivery of his goods but marine insurance does not cover against loss of time. To the insurer of the ship it is immaterial whether or not the ship is delayed in port and the insurer of cargo is not interested in delays in transit nor does he guarantee indemnity against loss for such delay however arising.

The protest of the laborer, resulting in a strike, is usually against some condition which militates, or he fancies it does, against his interests either as to hours, surroundings, pay, or some other fancied wrong, and is usually made at a time when he is satisfied that his "strike" will so cripple his employers, and thus become so far-reaching that to accede to the demands will be the easiest way out of the difficulty, both as regards trouble and expense. So far as the cargo owner is concerned he is not interested. He has contracted to pay a certain amount for the delivery of his goods to a certain point. If the laborer engaged to load his cargo has

a grievance it is against the contractor who undertakes to furnish the labor to do the loading, whether that contractor be the owner of the ship or an outside stevedore, and the setttlement of the dispute should be made by him with a view not to his interests alone but also to the interests of those with whom he has contracted to perform a certain service.

Granted that the cargo owner would be willing to step in and bear a part of the expense either by contributing to the defense of the contractor or by paying an additional sum for the carriage of his goods in order that the dispute might be quickly settled, in what way does that interest his underwriter? Certainly no peril of the sea is involved which could in any way obligate him to indemnify his assured.

Further than this such a disposition of this expense would tend to render contractors for loading careless as to the handling of the men whom they had hired to do the work for if they were to be relieved of the expense of such agitations they would not be likely to put forth much effort to avoid or overcome them. Even the shipowner loading his own ship, if he knew that he could shunt half of the expense or loss on to the cargo, would be apt to take the line of least resistance and would not take the trouble to resist what he knew to be an unjust claim on the part of his servants. It is not likely that underwriters will look with any degree of favor on the innovation.

A broker at Lloyds in expressing his view that this would not be acceptable from an underwriter's standpoint states as his reason that the cost of preparing the apportionment would be considerable and cites some general average case where the adjuster's fee amounted to about \$20,000, and he avers that in case of a general cargo ship the expense of procuring the necessary data to apportion the expense of a strike or labor agitation will be considerable.

THE "WIRELESS" AND ITS RELATION TO IN-SURANCE PREMIUMS.

The installation of radio telegraphy on the various steamers plying on the Coast, and its necessity due to Government action, has instigated the various shipowners, compelled to place that service on ships owned or operated by them, to agitate for a reduction in the insurance rates now charged.

While at first blush it appears that such a claim is reasonable and proper, still, a careful consideration of the benefits derived from the installation of wireless telegraphy does not prove that the advantage derived to underwriters will warrant any material concession. The addition of the wireless to the equipment of a



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steamer will not prevent break-downs at sea; will not prevent stranding or collision with another craft nor will it prevent damage by heavy weather, all of which may constitute a claim under the policy of in-

In case of a breakdown or other disablement at sea, the use of the wireless will, in many cases, secure prompt assistance and in some cases this prompt assistance thus procured may prevent serious loss in saving the disabled craft from drifting ashore, but in case assistance is thus called the claim for salvage remains the same and aside from the problematical question of a saving from a total loss there is no benefit to the marine underwriter.

In a very few cases owners on shore have been notified by wireless of the serious plight of their property and have been able to send tugs, under contract, to assist, with the consequent saving of a claim for salvage but these have been so infrequent that the saving has been problematical. With a ship disabled at sea no master will take the chances of waiting assistance, contracted for, when able assistance is offered by others attracted to the scene by his call for help.

It is true that timely warning, by wireless, of dangers ahead would, under ordinary circumstances, make for a saving to marine underwriters, but here the fallibility of human nature enters largely into the situation. Had the captain of the "Titanic," to whom it was alleged warning of ice ahead was given by a wireless message from another steamer, heeded the warning, the story of a great marine tragedy would never have been written. It is undoubtedly true that had not the call by wireless from the "Titanic" been heard and responded to promptly by others the loss of life would have far greater. The loss of the steamer "State of California," recorded this month, with a loss of over thirty lives, would have undoubtedly been a greater tragedy had not the wireless called for assistance, which call was heard and responded to by the steamer "Jefferson" and by whose aid many lives were saved that otherwise would have been lost.

The whole history of the benefits of the wireless so far is a record of the saving of life from wrecked and disabled vessels. Underwriters on ship and cargo are not, financially, interested, whatever may be their humanitarian instincts and until it can be conclusively shown that the use of the wireless results in a direct saving to them, or at least the probability, not possibility, of a saving, it is not likely that they look with favor on a reduction in insurance rates.

Marine insurance is a legitimate business based on the results of a long series of years, but there is also a

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gambling feature and given assurances that additional

safeguards will be provided, proven safeguards, the cost of participating in the game will be reduced. The wireless has not proven itself worthy of material recog-

THE "QUEEN ALEXANDRA."

The case of this steamer, now in the courts, has received much attention from the daily press but, as usual in such cases, without attention to the material facts. That suit and counter-suit has been brought is duly noted and commented on but the "why" has failed to receive the attention that the merits of the case deserve.

It appears that this steamer loaded with a cargo of lumber sailed from Portland (Ore.) in February, 1911, bound for the Orient. On sailing she received the usual certificate from the lumber inspectors that she was properly loaded and seaworthy. She proceeded down the Columbia River in charge of a river pilot and off Astoria was taken in charge by a bar pilot for passage over the Columbia River bar. On reaching the bar rough water was found and she struck heavily and remained there for several minutes striking heavily. After a careful consideration of all of the conditions the master thought to attempt to back the vessel away from the bar would be but to invite greater damage with possibly a total loss of ship and cargo and the only alternative was to force the steamer over the bar into deeper water. In coming to this conclusion he, as well as the chief engineer, realized that the machinery was certain to suffer damage. However that course was pursued, the steamer was forced over the bar with much straining of the engines and after getting into deep water it was found that the damage through striking the bar and through the forced passage was so great that it was necessary to seek a port of refuge where repairs could be made before the voyage could be resumed. Francisco was the port sought and reached.

After the repairs were completed the cargo underwriters advanced \$10,000 on account of general average charges that might be properly assessed against the When the cargo through the general average act. statement of general average was prepared the owners. through their adjusters, claimed, in general average, the damage to the machinery, the damage having been sustained, it was alleged, through a voluntary act of the master to preserve the entire venture from a total loss and which damage was known would probably occur through the forced passage of the steamer over the bar.

To this claim the cargo underwriters took exceptions

and on refusal to pay their contribution to this damage suit was brought to recover same.

In all cases of claims in general average for damage to machinery the proof that there was a deliberate sacrifice must be fairly conclusive and when such a claim reaches a point where the courts are appealed to both sides will take advantage of every technicality. In this case the underwriters on the cargo not only allege that the damage to the machinery was not the result of a deliberate sacrifice but they also allege that the steamer was unseaworthy at the beignning of the voyage, that neither they nor their principals, the cargo owners, are liable for any part of the expense of putting into a port of refuge and they sue to recover the amount which has been paid on account of any general average expenses so incurred.

So far as the allegation of unseaworthiness is concerned it is, of course, necessary for the steamship owners to put in testimony in rebuttal, but on those making the allegation the burden of proof falls. The question of allowing in general average for the damage to machinery is one of fact and must be decided on the testimony.

WRECKS AND CASUALTIES.

"CENTRALIA," Str. From San Francisco, August 2, for Grays Harbor. Struck on the bar and started some planking. The steamer was docked for repairs.

"F. S. LOOP," Str. From San Francisco, August 6th, for Puget Sound. Had her machinery disabled when off Tatoosh Island and was assisted into the Straits of Fuca

by the steamer "Hyades." The "F. S. Loop" has been libeled for \$7500 for alleged salvage services.

"POINT ARENA," Str. From San Pedro, August 7th, for Pigeon Point. Went ashore on the Point on August 9th after arrival. The accident is stated to have been due to the parting of a mooring line, and the steamer subsequently became a total loss. She was valued at about \$30,000, and was insured in the local market for \$20,000.

"SANTA ROSALIA," Br. Str. From New York, July 13th, for Victoria, B. C., via ports, put into Montevideo, August 18th, with machinery disabled.

"STATE OF CALIFORNIA," Str. From Seattle, August 14th, for ports in Southeastern Alaska. Struck an uncharted rock when leaving Gambier Bay and sank in deep water. So far as known some 33 lives were lost. The steamer was built in Philadelphia in 1878 and has had a very successful career. She was valued at about \$175,000. Insured in the local and foreign market.

"THIELBEK," Ger. Sp. See note below regarding "Thode Fagelund."

"THODE FAGELUND," Nor. Str. From Astoria, August 24th, with general cargo for Balboa. Was in collision with the Ger. Sp. "Thielbek," bound up the Columbia River in tow. The steamer sustained serious damage and it will be necessary to discharge the cargo for repairs.

"CURACAO," Str. The wreck of this steamer, previously reported a total loss, at Warm Chuck, Alaska, has been sold to the Vancouver Dredging and Salvage Company for \$4000. A contract has been made with the same parties to salve the cargo on a 75% basis.

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WRECK STATISTICS FOR 1912

The statistical summary of vessels totally lost, broken up, condemned, etc., just published by Lloyd's Register, shows that, during 1912, the gross reduction in the effective mercantile marine of the world amounted to 720 vessels of 748,965 tons, excluding all vessels of less than 100 tons. Of this total, 379 vessels of 572,745 tons were steamers, and 341 of 176,220 tons were sailing vessels.

These figures are lower than those for 1911 by 135,878 tons (47,007 tons steam, and 88,871 tons sail).

One of the most common terminations of a vessel's career is by breaking up, dismantling, etc. (not in consequence of casualty). The amount of tonnage so dealt with in 1912 was 157,641 tons, this being 97,876 tons less

than that for 1911. Nearly 23 per cent. of the steamers and 24 per cent, of the sailing vessels removed from the Merchant Fleets of the World in the course of 1912 are accounted for in this manner. Of the total tonnage of such cases over 38 per cent, is represented by United Kingdom vessels.

The number and tonnage of vessels lost, etc., during the previous seven years are as follows:

	-Steamers-		-Sailing Vessels-	
Year.	No.	Tons (Gross).	No.	Tons (Net).
1905			501	
1906	378	509,707	567	307,105
1907		565.119	512	286,105

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 \$ 250,000.00

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1908	382	566,487	418	242,805
1909	383	645,670	483	293,562
1910	421	667,440	442	280,250
1911	427	619,752	461	265,091

The Statistical Tables issued by Lloyd's Register exhibit interesting data as to the relative frequency of the different kinds of casualty, etc., which conclude the existence of vessels. Strandings and kindred casualties which are comprised under the term "wrecked" are much the most prolific cause of disaster. To such casualties are attributable over 54 per cent, of the losses of

steamers, and over 55 per cent. of sailing vessels. Cases of abandoned, foundered, and missing vessels are no doubt frequently more or less similar in the circumstances of loss. If these be taken collectively, they form over 24 per cent. of the steamers, and over 291/2 per cent. of the sailing vessels removed from the mercantile marine during 1912, owing to casualty.

Great as the absolute annual loss of vessels belonging to the United Kingdom appears to be, it forms but a very moderate percentage of the mercantile marine of the country, and to compare favorably with the losses sustained by the other principal maritime countries.

F. I. A. T. DIESEL MOTORS

By J. RENDELL WILSON

ITALIAN MARINE OIL ENGINES FOR MERCAN-TILE AND NAVAL PURPOSES

In view of the large amount of naval work that has occupied the F. I. A. T. Co.'s Turin works of late years, practically all the Diesel engines which they have built have been of the high speed type. Now that the task of constructing this class of machinery has become more standardized and the rate of production greatly accelerated, the makers have been enabled to give more attention to a heavier type of Diesel, meeting the requirements of tramp and other commercial vessels.

As will be presently seen, the new model differs considerably in design from the naval engine, conforming, as it does, more to ordinary marine steam practice. Both types, however, operate on the two-stroke principle, the only four-stroke motors constructed by the F. I. A. T. being small sets for engine-room auxiliary purposes. To-day the firm have built, or are building, Diesels amounting to over 30,000 brake horse-power, for installation in the Danish, Brazilian, English, Swedish, and Italian navies.

The slow-speed mercantile engines are being built in powers ranging from 1,000 B. H. P. to 8,000 B. H. P., in either four or six cylinders, according to the class of vessel and the speed available. The normal working speed is from 150 to 100 R. P. M. It will therefore be seen that by fitting two or three propellers sufficient power can be installed for the largest cargo ship, or even small liners.

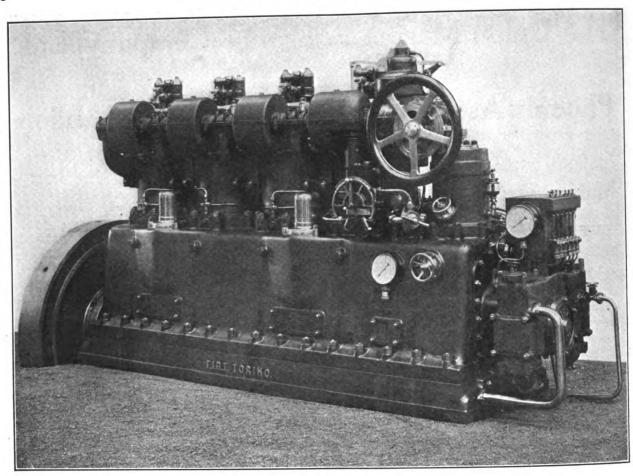
Economy when running naturally was an important point to be considered by the designers, so the stroke of the piston is much longer than the diameter, and the scavenging valves, scavenging air pipes, exhaust pipes, etc., have been most carefully calculated, thus reducing the speed of the gases. The open type of

framing and crankpit, with separate scavenging pumps, driven by rocking levers off the crossheads have been adopted.

While retaining the same valve gear and reversing mechanism as is fitted on the high speed motors, the general design differs in the following respects:

- 1. All working pistons are fitted with separate crossheads, thus the surfaces of the cylinders are not loaded with any abnormal pressure or side strains.
- 2. Every pair of cylinders is fitted with its own double-acting scavenging pump, this being placed on the port side of the engine and driven off one of the crossheads by means of a suitable balance lever, as just mentioned.
- 3. The frame is formed by an upper coffer, in one or more sections, according to the various engines, and connected to the bedplate by means of a series of columns, starting from the middle point of the main bearings and being secured by means of bolts passing throughout them, directly from the upper coffer to the bedplate. These columns are also designed to bear the guides for the crosshead slippers.

These crossheads are of the type well-known in the design of marine steam engines, being provided with twin slippers for each side of the piston rod. The slippers are so arranged as to automatically compensate in the slightest mistake, or inexactness, during erection. Also the casting on which the pistons are mounted, is utilized as a compensation tank for scavenging air. Both the large bolts connecting the upper casting with the hedplate and those connecting the cylinders, also the ones fastening the covers of the main bearings, are



A 100 H. P. F. I. A. T. MARINE DIESEL ENGINE

fitted with nuts at both ends, thus avoiding the screwing of the studs into the metal.

The connecting rods' heads are formed by two rectangular brasses forming the part of the heads and a junction plate for the two brasses. The columns and bedplate are of cast iron. Special lagging sheets are fitted between the various columns, and in this way the frame resembles a hood. The unitary weight of the low-speed engines in connection with power and working conditions required varies from 60 to 100 Kg. per B. H. P. developed.

With regard to the faster and lighter engines these are, of course, well suited to certain classes of merchant craft, apart from naval vessels, such as tugs, ferryboats and shallow draught passenger ships.

Fig. 2 illustrates a F. I. A. T. Diesel motor, well suited for a tow-boat. It is a four-cylinder model, 170 mm bore by 220 mm stroke, developing a little over 100 B. H. P. at 500 R. P. M. Fig. 3 illustrates the general and sectional port views of a six-cylinder, 430 B. H. P., marine engine. The general design and construction of both these motors are very similar, so a description of one applies to the other.

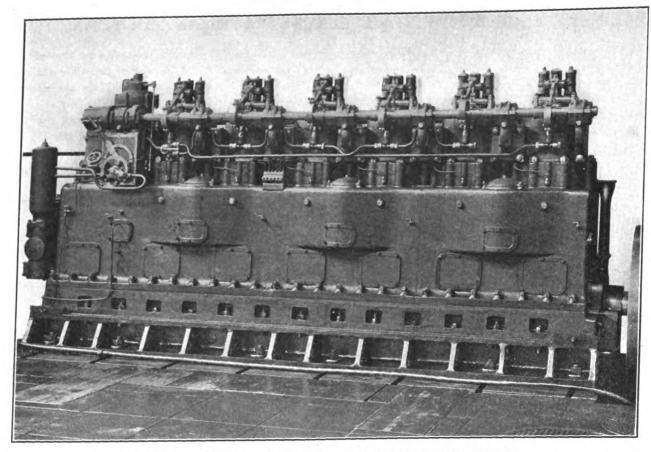
The lower part of the engine consists of a base plate carrying the main crankshaft bearings, and on this is a frame, to which the cylinders are separately bolted. No independent scavenging pumps are required, as in the case of the slow-speed motor, because the pistons each have a double diameter, the upper section acting as a working piston and the lower as an air pump. This is generally termed as a stepped piston, and is also adopted by the M. A. N.-Diesel, and the new Polar-Diesel, engines. The cranks operating each pair of cylinders are at 180 degrees to one another, and so

the scavenging pumps of one cylinder are compressing air, while the pumps of the second cylinder are sucking its charge of atmosphere. So it is possible to have two pumps controlled by one slide-valve, which is of the piston type and can plainly be seen in Fig. 3, in the end section view.

The upper side of the crank-case frame is used as an air reservoir-chamber, and into this space the scavenging air is compressed to 0.2 to 0.4 atmospheres, according to the engine-speed. Disposition of the air is effected by one conduit being connected with one pump, and the other conduit with the second conduit. The piston type slide-valves are operated by a lay shaft, which is operated by helical gearing off the same vertical shaft as drives the overhead camshaft. Exhaust is through ports in the cylinder walls, the ports being uncovered by the piston on the down stroke, as it is the usual practice of two-stroke motors. At the forward end of the engine is a two-stage air compressor, which is driven off an extra crank-throw. This supplies air for starting purposes and fuel injection, the compressor supplying reservoir bottles, and not direct to the valves.

At the forward end of the engine is an auxiliary group, consisting of a cooling water circulating pump, and an oil pump, and these are driven off the crankshaft through reduced gearing. In addition to lubricating, the oil is used for cooling the tops of the pistons. On the horizontal cam-shaft, plainly depicted in Fig. 3, an eccentric is keyed in correspondence with each cylinder. This operates the air valves, and the fuel valves, the action being by a single angular cam, which is given an oscillating motion by the eccentric.

Let us now turn to the reversing arrangements. In the diagram of the normal distribution the middle



PORT SIDE VIEW OF A 430 H. P. F. I. A. T. MARINE DIESEL ENGINE

points of the fuel-injection phase are 180 degrees distant from each other. Consequently, in order to pass from the distribution, corresponding to a direction of rotation to the distribution of the opposed direction, it is sufficient to change the relative position of the working eccentrics to the main crankshaft. This movement is obtained by an axial displacement on the vertical shaft of the worm-wheel which drives the horizontal shaft, the displacement being effected by compressed air. Controlling is effected by a lever and a quadrant (by a wheel and lever in the 100 H. P. motor), which are in front of the control box, the latter being placed at the end of the engine in correspondence with the vertical shaft, between the after cylinder and the compressor. The upper lever controls the worm-wheels on the vertical shaft, and the cams working the starting valves. The handle on the quadrant regulates the amount of fuel delivered from the pumps, by keeping the suction valves more or less open during the delivering stroke. An automatic governor controlled by means of a centrifugal pendulum, cuts out the fuel if the engine exceeds its desired speed, such as may happen by the propeller lifting out of the water. Reversing from full ahead to full astern can be carried out in 5 seconds.

The plans of the engines described in this article are now in the office of the "Pacific Marine Review." We shall be glad to loan these to any interested reader.

The Committee of Management of the International Engineering Congress, 1915, takes great pleasure in announcing that Colonel George W. Goethals, Chairman of the Isthmian Canal Commission and Chief Engineer of the Panama Canal, has consented to accept the Honorary Presidency of the Congress and will preside in person over the general sessions to be held in San Francisco September 20-25, 1915.

M. S. "PEDRO CHRISTOFFERSEN" COMPLETES SATISFACTORY TRIAL TRIP.

Messrs. Burmeister and Wain, of Copenhagen, inform us that the M. S. "Pedro Christoffersen" executed her official trial trip on August 1. The engine had previous to the trial trip been tried in the ship but once and then when the ship was lying at the wharf. The trials were carried out to the entire satisfaction of the owners and on completion of same, the M. S. "Pedro Christoffersen" sailed for Sweden.

The newly completed motor ship, which is a sistership of the M. S. "Suecia," is of the following dimensions: Length, 362 feet; beam 51 feet 3 inches; depth, 25 feet 6 inches; draught, 23 feet 1 inch; d. w. capacity 6550 tons.

During the trial trip the oil-consumption was measured at 176.5 Gr. per B. H. P. hour, including the consumption of all the auxiliary machinery, steering gear and light. The oil was of a bad quality with a heating value of only 9900 cal.

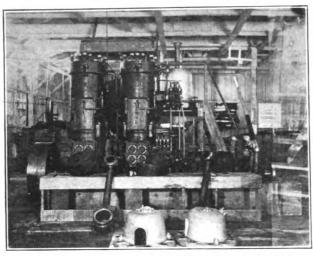
OIL ENGINE TORCH.

A new type of oil engine torch has been designed for use in the Lighthouse Service, which, when tested recently on a light vessel, permitted the starting of the 13-horsepower oil engines in six miutes from time of commencing to heat the torches. This type of torch does away with the constant pumping, as on old style, and the necessity of attendant standing close to hot vaporizer. It also removes the oil tank of torch from the vicinity of the hot vaporizer, the tank on the new torch being located away from the engines. It is estimated that a single torch outfit, complete, can be built for \$36, and a double torch, complete (two torches, one tank, and pump), for \$49.

BOLINDER ENGINE NOW BEING DEMONSTRATED IN SAN FRANCISCO

The accompanying photographs show the Bolinder engine which has been installed in San Francisco by Messrs. Henry Lund & Co., Pacific Coast agents, the test bed results from which should prove of great interest to power users both for land and sea purposes.

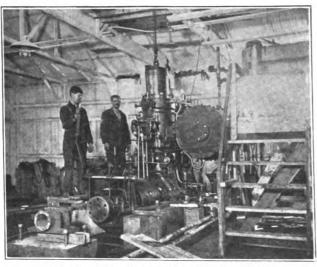
The Bolinder Engine has several important features, and one is particularly interesting to those wishing to operate their engines with asphalt base oil. Unlike the Diesel engine the Bolinder has no pulverizer and thus there is no chance of the fuel passages being clogged



FUEL INLET SIDE-BOLINDER MARINE MOTOR.

up by asphalt deposits, the pressure of the fuel pump itself keeping the passage into the cylinder clear.

Another very great point in its favor is the absolute accessibility of all parts and owing to the absence of valves, the great ease with which the cylinder covers can be removed, leaving the pistons exposed for inspection and also admitting of the removal of such



EXHAUST SIDE-BOLINDER MARINE MOTOR.

carbonaceous deposits as may possibly form after prolonged running.

The ease with which this can be done is shown by the fact that on the two-cylinder engine, the covers and

ignition bulbs can be removed, the cylinders cleaned, the covers replaced and the whole engine be ready for running again well inside of four hours from the time of shutting down.

The whole engine is absurdly simple and the lack of external gear is particularly noticeable, there being as previously mentioned, no working valves and therefore no cam shaft. Again the cumbersome and often ineffective reversing gear is done away with and the engine is itself reversed by merely pulling over a small lever. This system apart from being absolutely fool proof, enables the engine to be reversed even more readily than a steam engine. At the same time a clutch is fitted to save any unnecessary strain on changing from full ahead to full astern, which operation is performed in an exceedingly short space of time.

The absence of any high pressure air system is one of a number of points in its favor over the Diesel and when one considers that a heavy grade oil can be burned, insuring a safe and economical running, the engine should certainly become an important factor in Pacific Coast marine development.

Beginning with the October issue of the Pacific Marine Review, this publication will appear on the first of every month. Changes in advertisements should reach our office by the 20th of the month preceding publication.



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Gasoline barge "Wakena" at Portland. Built 1911. Registered tonnage, 199 gross, 106 net; 116½ feet long, 25.7 feet wide, 7.5 depth hold. Conservatively can carry 250 tons merchandise or 200 M feet lumber. Cargo space under deck, dimensions 60 feet long by 20 feet wide. Twin screw, equipped with two Union Gas engines of 100 H. P. each. Also an 8 H. P. Union Gas engine for lighting and a 20 H. P. Union Gas engine in double drum freight hoist. Boat is fully rigged and equipped. Electric search-light and electric flood-light and electric wiring complete throughout. Sleeping accommodations for fifteen people.

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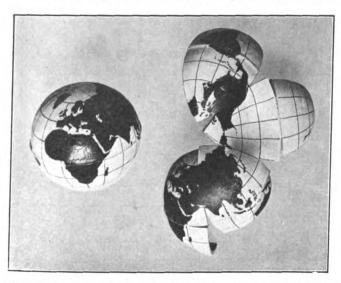
Maritime Building SEATTLE

A NEW MAP OF THE WORLD

Quite a new and unique idea has been originated by Mr. B. J. S. Cahill, an architect of this city, in a map known as the "Butterfly Map of the World."

Not only is this new map of unusual general interest by reason of its accuracy and its extraordinary shape, but it is of particular concern to those who live on the Pacific Coast as it clearly shows why all sea-borne traffic passing through the Panama Canal en route for the Orient, must, if advantage is to be taken of the shortest route, proceed along the Pacific Coast passing practically every port from Panama to Portland. This latter, however, applies especially to cargo vessels, the route via Hawaii being preferred by those operating vessels carrying passengers on account of the more favorable climate to be had.

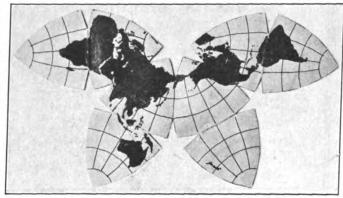
The new map also shows that Puget Sound is much



SHOWING THE IDEA OF THE MAP ON THE BALL AS FIRST ORIGINATED.

nearer Japan than most people would at first suppose and it demonstrates that Alaska, with its enormous coal supplies, is on the shorter route to the Orient. While these facts are known to navigators and others interested in ships and shipping, it seems rather strange that the shortest routes were indicated on Mercator's chart by the longest lines.

The map originated by Mr. Cahill is similar to that of the orange lobes, except that fewer lobes are used, and instead of being connected at the equator, they are connected in the northern temperate zone, so that no large body of land, with the exception of one edge of Greenland, is cut by the lines which divide the map into sections. Mr. Cahill originally made this map out of a rubber ball, a couple of inches in diameter. On this he scribed lines of latitude and longitude, 221/2 degrees apart, and drew in the map of the world. The equator was represented by a red line, the meridian 221/2 degrees west of Greenwich by another red line that was extended around the earth, and a third red line was put in at right angles to both of these great circles, which would bring it to 1021/2 degrees west of Greenwich. Where these three great circles intersected, the ball was



BALL OPENED OUT AND LAID FLAT, SHOWING "BUT-TERFLY MAP OF THE WORLD."

cut with a sharp knife along each line for a distance of 221/2 degrees from the point of intersection. This divided the globe into eight equal parts, four north and four south of the equator. The cuts were then continued southward to liberate the four southern lobes, and one of the cuts was continued northward so that the globe could be opened out and laid flat, as shown in the illustration. So little was the distortion when the globe was flattened out, that even the paint on the surface of the ball did not crack. On releasing the map, it jumped back to its spherical form, becoming a globe again. It represents the best attempt so far to map the globe on a plane.

Mr. Cahill is well known in San Francisco, his plans for a Civic Center having been adopted by Mayor James Rolph.

The map invention, described above, is protected by world-wide patents secured by Mr. Cahill. A company is now being formed to exploit the many ventures made possible by this new invention.

By the reorganization of the chartering department of Messrs. Hind, Rolph & Co., of San Francisco, which move is of greatest interest to shipping men at this port, H. W. Meyers, manager of the Seattle office and a lumber shipping expert of world-wide reputation, received a well-earned promotion to the San Francisco office with complete control of the chartering department and authority to handle the lumber dealings of the big firm.

On August 1, Mr. H. Brandt was appointed general agent of the Passenger Department of the Pacific Coast Steamship Company at Seattle, Wash., vice Mr. George W. Andrews, who has been assigned to less arduous duties on account of ill health.

Mr. Brandt's jurisdiction will include Alaska and territory East and South, to and including Winnipeg, Man., Havre, Helena and Butte, Mont., Boise, Idaho. and Portland, Ore.

Several changes have also been effected in the Los Angeles office of the Pacific Coast Steamship Company. Mr. H. B. Brittan has succeeded Mr. Brandt as District Passenger Agent, and Mr. A. S. Jones has been appointed City Passenger Agent. Mr. R. B. Schutten has been promoted to City Ticket Agent.

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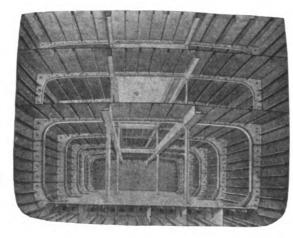
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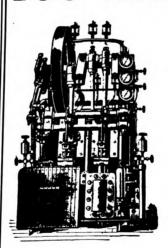
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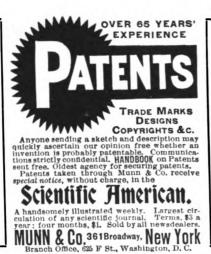
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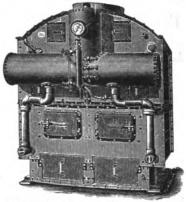
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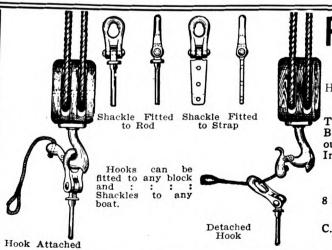
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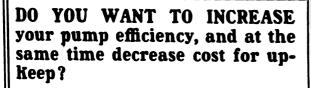
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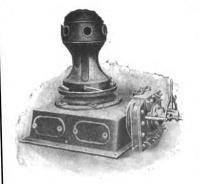
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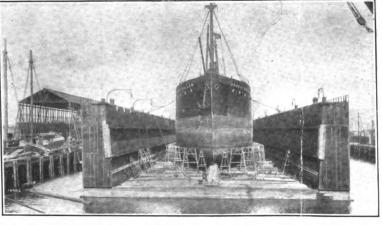
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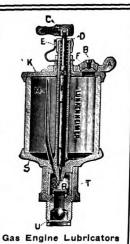
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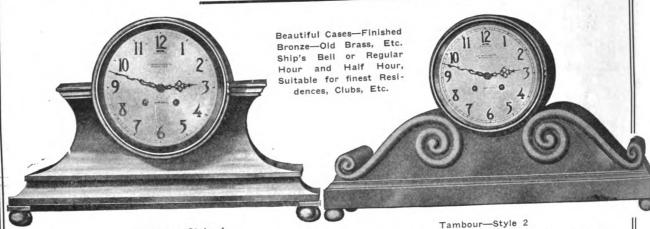
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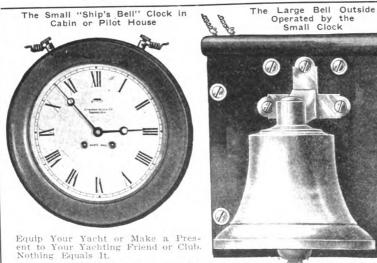
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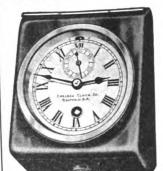
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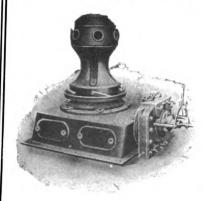
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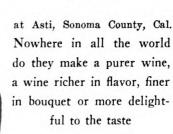
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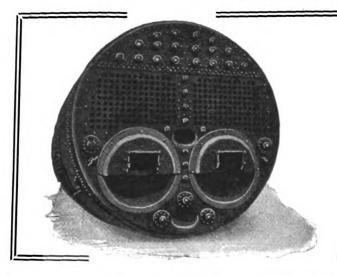
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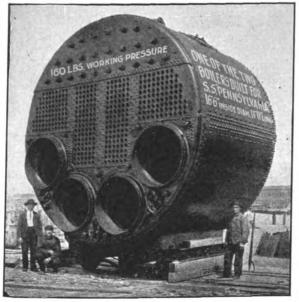
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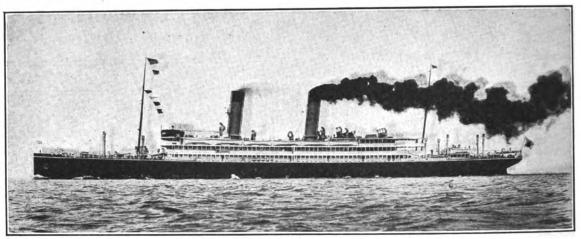
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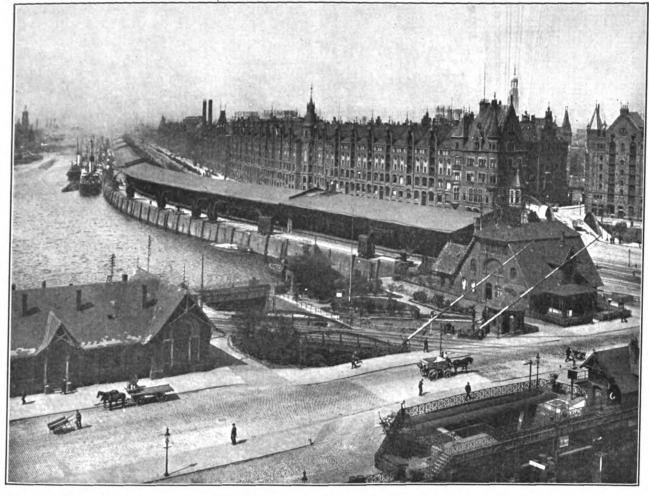
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DESIGNING MARINE TERMINALS FOR MECHANICAL TRANSFERENCE

By H. McL. HARDING, Consulting Engineer Freight Terminals, New York.

In planning for a complete marine terminal for miscellaneous cargoes or package freight, it is necessary to determine the relative positions of the terminal elements to each other. These will be influenced by local conditions such as the available land space and water area.

The land approaches to the terminal for drays and railway cars must be provided.

Terminal Elements.

The diagram, No. 1, for a projecting pier-terminal with special double width slips will illustrate these relative positions.

The ships, lighters, piers, pier-sheds, bulkheads and sheds, railway tracks, dray areas, platforms and warehouses are shown in relation to each other.

The diagram is given to emphasize the fact that a package freight terminal to build up a large commerce must have the above elements. There cannot be ignored, physical connections between all parts of the terminal with a belt railway, and also with trunk lines for freight for interior cities.

The dray area and platforms should be of such length that the drays will not be detained waiting for an opportunity to be loaded or unloaded. Warehouses, public or private, for long storage are essential.

Other terminal elements are often added, but the above are the principal.

Freight Movements.

Without a full knowledge of the freight movements or operating conditions, it is difficult to conceive of satisfactory results.

The dotted lines in the second diagram explain the freight movements to and from the ship. In addition there are the movements between the different terminal elements themselves.

The Viewpoint.

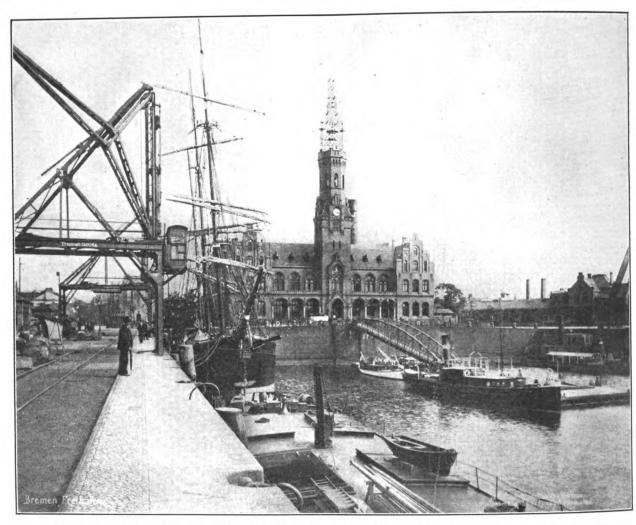
There are, however, two viewpoints, from which marine terminals for miscellaneous cargoes can be designed, and the plans, based upon each other, differ so widely as to constitute, apparently, a direct opposition or contradiction of ideas, even for the same waterfront location.

Manual Labor.

One, or the former method, has consisted in planning the layout with the intention of using surface trucks operated by manual labor or by various floor occupying devices.

Mechanical Transferring.

The other method, for which the terminal in the diagram was designed, was for the installation of freight moving machinery, combining gantry cranes with elevated runways, transferring for the most part, overhead, and



WALL, THE WOODEN FENDERS, THE FIXED GANTRY CRANE, THE BRIDGE TO THE PONTOON. THE ARTISTIC ADMINISTRATION BUILDING.

tiering so to obtain the greatest pier or quay capacity.

Limitations of Each Method.

Each method has certain limiting factors. Those of the former for manual labor, may be said to be, the necessity of reducing the distance of the travel of the freight movements to a minimum, and the avoidance of grades, and there not being more than one operating level.

In mechanical transference, the limiting factors are the necessity for simplicity, serving of all cubic space, and the attaining of a rapid, continuous succession of movements and the avoidance of rehandling.

The Owner, Shipper and Consignee.

To the owner of the ship, rapidity of discharging and loading is of dividend-producing value. The more voyages the more returns. The charter value of a large modern freighter is upwards of five hundred dollars per day, and to this should be added the prospective earnings.

The certainty of the goods being promptly loaded or discharged and delivered, gives the utmost satisfaction and profit to the shipper or consignee, and results in more business for the terminal.

The Foreign Idea.

The municipality, which is investing millions in terminal improvements, must have the greatest possible working value from every foot of improved quay wall to avoid immediately investing other millions for more terminals.

If the land and a couple of quays or piers with sheds

should cost two million of dollars, unequipped, and by the installation of modern freight handling machinery, through increased rapidity in cargo transference, high tiering, and the utilization of rear shore-lands, there can be double the number of vessels or double the tonnage handled, during a certain period by this machinery at this terminal, there has been obviated the immediate investment of an extra two million for the second terminal.

The German engineers, as well as those of England, France, Holland, Belgium have so completely digested this fact that no marine terminal is designed without provision being made to secure the greatest possible pier or quay wall transferring capacity.

Machinery as an Investment.

At all important foreign ports, this fact of using the investment to the utmost, is the reason for these States or municipalities continually buying and installing such complete mechanical equipments. To use the oftenheard expression "It pays," and pays most bountifully. The charge for the use of the machinery also produces a direct return on the investment, though this is small in comparison with the increased value of the ter-

The Chinese method of transporting goods for miles in wheelbarrows is regarded as archaic. It cannot be otherwise but that foreign engineers should look at our relying wholly upon the wheelbarrow-truck and other time-worn devices in somewhat the same light. A hand trucker often makes as many miles at a terminal station in a day as the wheelbarrow man in China on his daily travel.

Abroad, the port authorities purchase and install the gantry cranes and other appliances. Except within the past two years, this providing such mechanism has not been done in the United States, by states or cities, except in a few cases, and the terminals have, therefore, been designed for the wheelbarrow (hand truck), with narrow sheds, low studded, condensed and as near as possible to the water's edge.

The speed of the "wheelbarrow man," averages during the day, including stops about 250' per minute with an average of 260 pound load. The man tires, but machinery is as fresh at 5 p. m. as at 8 a. m.

There is more or less congestion because so much floor space is occupied by the barrows (trucks) coming and going and all movements are on the one floor level.

The result of inclines or grades on such barrow-freightmovements is evident to all who have seen three or four men helping push the hand truck and load, up a steep gangplank. This materially adds to the expense and checks any attempt at continuous speed.

Should it be attempted to serve two stories with continuous rapidity, using hand trucks, the effort becomes a farce. Two-Level Wharf.

In some cases where there are great variations in the water levels of rivers, there have been constructed

four-story wharves. At the lowest stage, the freight was unloaded on the bottom story, and then by ramps or elevators raised successively to the higher floor or floors. In some cases, the rehandlings were three or four. Each rehandling costs between fifteen and twenty cents per

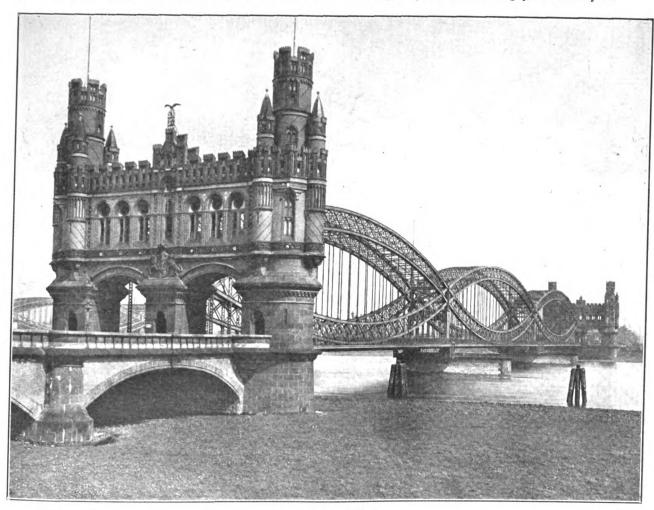
One-Level Wharf.

With modern machinery, and one level, as is illustrated by the views of gantry cranes, the load is raised from the ship's hold, from the vessel's deck, or from the barge, lighter or river craft by one movement, upon the quay wall at a cost of not to exceed three cents per

A two-story wharf can offer only additional handling costs, and does not provide even additional storage capacity in comparison to those of one story, and with the high tiering by machinery.

Holding Space.

Much of this upper floor of the two-story type on account of being cut away for ramps, inclines, elevators and approaches to these, there is far less temporary holding space, than with one level and the high tiering. The operating cost with two floors is at least fifteen to twenty cents per ton additional to the one movement. There is also the first outlay for the extra floor, which floor is submerged by the river during part of the year.



THE DEVELOPMENT.

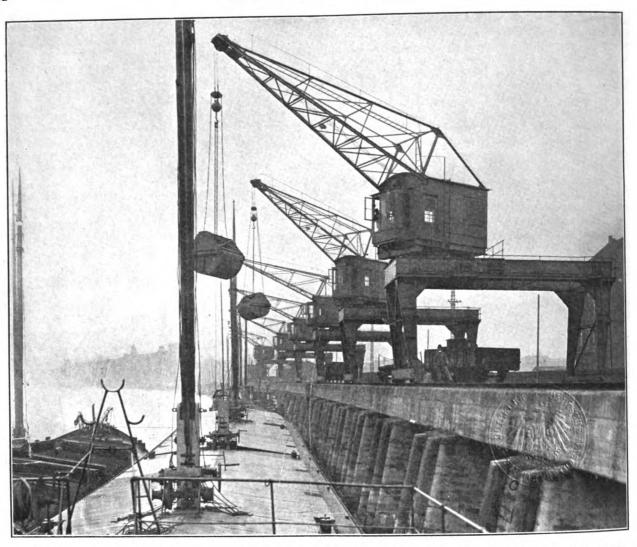
THE DEVELOPMENT.

First a log-dugout or a canoe with a hole in the rushes for a landing place, or a floating log and an Indian trail to the shore; next a sailing lugger with its square sail, a few sticks in the mud supporting a trembling platform and to the rear a horse road; then a crib pier, or a pile wharf, a sailing vessel or the early boat propelled by steam, a wooden shed, a mud wagon road, all temporary for private use for a few years, then the rough stone wharf, possibly a paved levee in some way to reduce the eternal maintenance cost, the cobblestone-paved street, the brick shed, and brick warehouse and the cut-stone pavement.

One generation and its engineers, with only the private ownership idea, wholly, as was essential, utilitarian and ephemeral, to the last, are dead, leaving little of permanency.

Finally the State, the Municipality, the community, all coordinate for permanency, utility, and that which would have been folly run wild, in the early pioneer days, a construction better adapted to use but also artistic.

It is a higher plane of civilization and is fully exemplified in the above view of the River Bridge at Hamburg.



Particular attention is called to the permanent construction of the German pier or quay substructure. It is of reinforced concrete, the projecting portions being protected by inclined wooden facings with vertical posts at regular intervals. This type is also of the best value for projecting piers, where it is desired that there should be a free course of the tide or a river. With the exception of the replacing of the facings, little maintenance is necessary. Compared with the wooden pile wharves and their continuous repairing, comment is unnecessary.

The type of Rhine boat or river barge often carrying twenty-five hundred tons of freight, being equipped with hinged masts and mast-rests, is of special interest as to the Western River and Coast-Barge traffic.

Close to the edge of the wall is the front rail of the full arch gantry crane. This crane spans several railroad tracks, revolves with the load of two and one-half tons from the barge to the car and the reverse movement. This German Rhine River Traffic in 1912 amounted to 61,189,316 tons.

By mechanical transference with a speed of 1,000' per minute and an average conveying and distributing load up to six tons, utilizing overhead space, otherwise unoccupied, combining the hoisting (lifting) with the distributing, both by machinery, the unavoidable difficulties in design, inherent to floor occupying and to manual labor, such as lifting by hand at the beginning and end of the every trip, disappear, as well as the objection to distance and to inclines and grades.

Freedom in Planning.

It will be seen that at such a speed per minute and grades being of no objection on account of hoisting equalizing levels, that there is much more freedom in the designing

Greater Care in Designing.

There is, however, as in every more highly organized construction, a greater opportunity for making mistakes in installation, than where the Chinese wheelbarrow and a winch-rope-attachment is the only method.

This is evidenced by the better the machinery the more careful the designing, as the locomotive or the automobile over the wagon, the steel bridge and the steel rail over the earth viaduct and the plank road.

This reference is made because, as is well known,

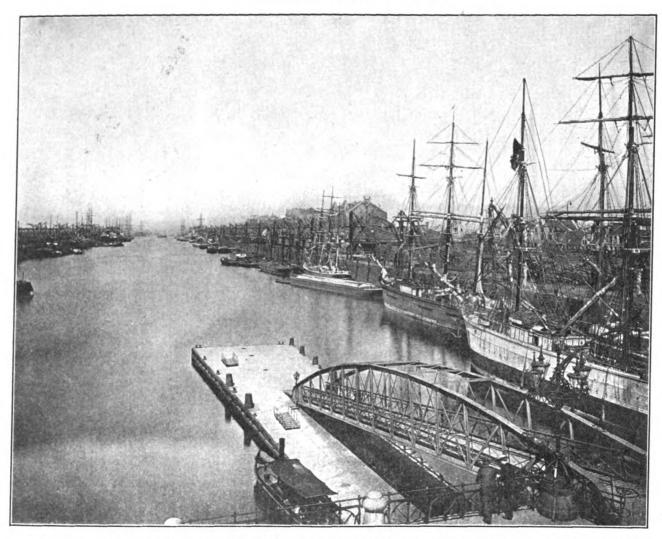
mistakes have needlessly occurred in planning and chiefly for two reasons, the manufacturer was not familiar with the operating conditions of the freight movements, and the pier superintendent was similarly ignorant as to the machinery limitations, and both, how the operating conditions and the machinery were to be combined to secure success. The results which occurred were predicted with exactness, in writing, before certain installations were made. "When the blind lead the blind, both will fall into the ditch."

These needless mistakes may be summarized, in the permitting of congestion due to rehandling, the occupying floor space, resulting in interference and preventing rapidity. As has been stated, congestion prevents the all-important feature of rapidity, and besides, in one case, the rehandling so increased the expense that the economy of mechanical transference was lost.

Assorting.

Another erroneous idea, which was tried, was that the assorting according to consignments must be done by hand into large containers after the goods were delivered from the wagons.

Reflection will show that this was one form of rehandling, that is, placing in or upon the container, which



At the German ports, even in this 1913, there are many sailing ships carrying grain between South America and Germany. On the right, the low buildings are the sheds, and to the rear are the high warehouses.

was to be conveyed by the machinery. This starts with fifteen cents uselessly expended.

It may be said that the three principles of freight transference, namely, serving all space, no rehandling, and continuous rapidity were all neglected.

Errors Easily Avoidable.

Had the installation been properly designed from the mechanical transferring viewpoint, the rehandling-congestion and the resulting loss of rapidity could have been easily avoided.

In the designing, therefore, a few features should receive consideration. The first is simplicity of opera-tion, the avoidance of the continually operating and closing switches, and cross-overs, or other possible congestion-producing points.

General Principles.

All plans must conform to the configuration of the land, whether bordering on a large expanse of water, as a bay or a river with a broad fairway, or a narrow stream.

There are, however, certain broad general principles, and these may be followed, as far as possible, subject to the local restrictions and the amount of the appropriations available.

The appropriations should be properly divided and apportioned to the various elements of the terminals and not all be expended for the land, a pier and a shed, and wait for future appropriations to make a working unit.

One small terminal completely equipped will handle

more freight and add more to the prosperity of the city than several partially equipped.

The suggestions, herein recommended, are the result of studies, at many foreign terminals, of the latest methods and practices, and confirmed by experience both there and in the United States.

Allowing for exceptions and differences of opinions, they may be said to represent the methods generally approved.

Dimensions.

Where practicable, the length of projecting piers should be from 500 to 600 feet or some multiple of these figures.

These lengths are in accordance with the dimensions of the larger freighters.

Berths, along quay walls with parallel sheds, can be of equivalent lengths.

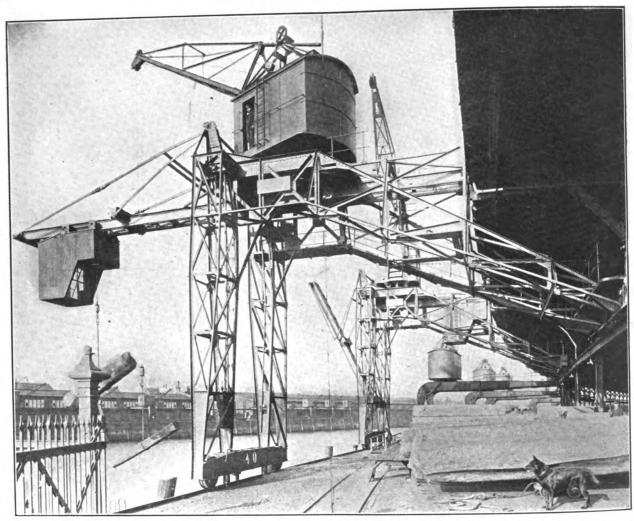
The width of the slips between piers should be about 300 feet.

Piers and Quays.

The width of shedded piers for package freight should be such as to provide loading, discharging and temporary holding capacity for a ship on each opposite side of the pier, with due consideration to the total length of the

For a pier 600' in length the width should be from 200' to 250' in width, and for a 1,200' pier from 250' to

All of these figures with many others given are subject to variations, but the above dimensions are for piers



To secure even greater rapidity than can be secured by the type of Gantry Crane previously shown, the above is called the double Gantry Crane. It is in addition to the revolving jib crane revolving on top of the pedestal. The two will operate simultaneously, thereby shortening the stay of the vessel at the pier.

Another difference between this Gantry Crane and the others is the lattice work in the place of the plate girders. Here, there is no fixed raised platform alongside the shed, which is preferable; also a projecting roof of the shed, under which the goods can be swung by the crane.

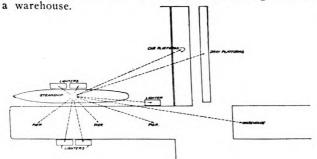
There will be noticed on the other side of the dock slip, a type of quay wall construction. Piles are driven to the mean low water line, and upon these is built up the concrete wall.

which, when mechanically equipped, will enable the greatest rapidity and economy in freight movements to be attained.

Trans-Shipment Sheds.

On quays parallel to the shore or to the course of the river, and where the shed is parallel to the quay wall, the preferable width is 200'. This width has been adopted as the standard width at the Port of Hamburg.

The function of the trans-shipment shed is for receiving, assorting, distributing, temporary holding and trans-shipping the miscellaneous cargoes. Such a shed is not for long storage and should not be regarded as



agram shoving Freight Novement.

It is better always to be of one story, except in the case of large ocean liners where the lower story is for the freight movements and the upper story for passengers and baggage.

Such steamers are primarily passenger carriers, and the freight being subsidiary, such sheds should be treated separately. For coastwise ships and freighters, carrying passengers, galleries in the sheds, at a high level, have given excellent results.

For high tiering, thirty feet in height, for the sheds below the girders, are recommended, although thirtythree feet are often preferred.

Transit Sheds.

As an intermediary, between sheds and warehouses, transit sheds may be provided.

These are for hold-over freight, which freight must be removed from the trans-shipment sheds, and yet being for early transit by rail or other carriers is not to be stored in the warehouses. These sheds may be compared with bulkhead sheds. Railway tracks are located in those in these transit sheds.

Railway Tracks.

Where a trans-shipment shed is to be reserved solely for package freight, of many marks or cross marks, railway cars should not be used upon the projecting piers unless of exceptional width.

Where bulk freight or full cargoes of few marks are to be transferred, the cars should pass upon the piers, and the tracks should be between the shed and the edge of the pier. For outbound car-freight, to be loaded into the ship, if it can be swung from the side of the car into the hold, the cost will be less than three cents per ton, besides great rapidity. If there are more movements, the cost will be increased and the speed of the movements diminished.

Where freight must be assorted according to the consignments, either inbound or outbound, which means distributing within the shed, then the cars are of a disadvantage and, if within sheds, take up much valuable room.

It may be advisable as a general rule to have tracks on such piers for special service, and the cars used only under advantageous conditions.

It is better, however, to determine the track question for each individual pier.

On quays, tracks should be between the shed and the water's edge and, also, behind the sheds.

All of the above is from the viewpoint of mechanical transference.

The various photographs are given to illustrate the relative position of the terminal elements to each other. There are the pictures of the solid quay wall, the railway tracks and to the rear the sheds of different types.

Some of the warehouses are not only most serviceable but the artistic has not been neglected. The extent to which ornamentation has been carried is illustrated in the photograph of one of the bridges over the Elbe, Germany.

Conclusions.

First: That a terminal should be planned to secure all possible workable value of the terminal investment.

Second: That a complete terminal consists of a number of essential elements and that these should be coordinated in proper relation to each other.

Third: That the design of the terminal should be such as to secure the utmost speed and economy in loading and discharging vessels and cars, with ample shed holding capacity.

Fourth: That by mechanical transference, the first three conclusions can be most successfully and satisfactorily attained.

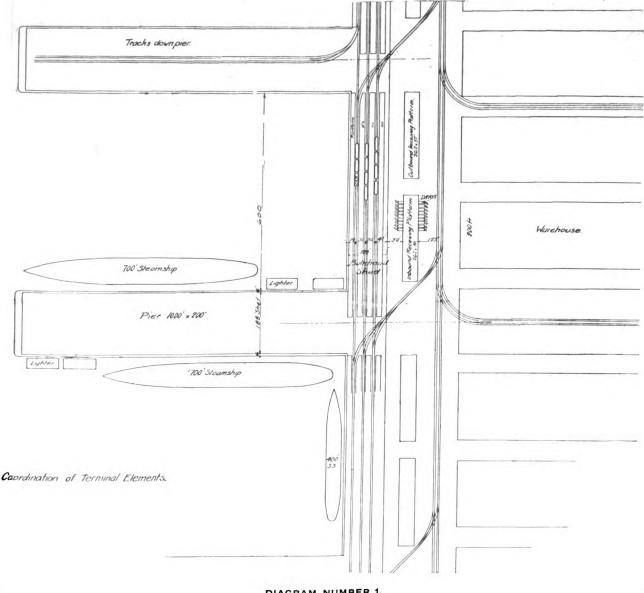
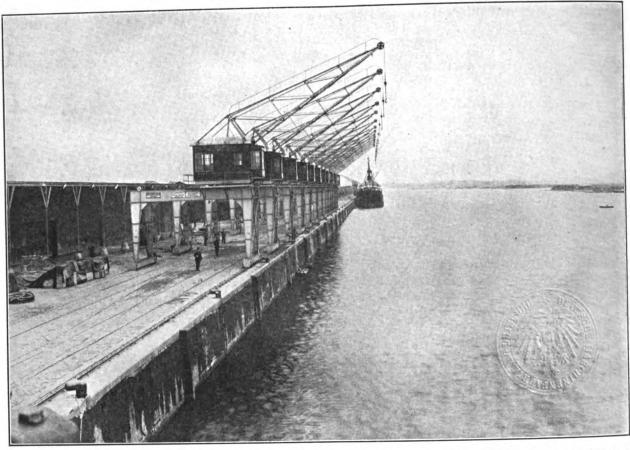


DIAGRAM NUMBER 1.



The later general rule at Hamburg is that there should be one gantry crane for every 65'. Being movable, it is possible for three cranes to take cargo from one hatchway.

At Hamburg there are over 800 cranes for loading and discharging vessels. Although there have been constructed 130,000 lineal feet of quays for ocean lines, and 5,000,000 square feet of sheds, work has been going on for two years in building 40,000 additional lineal feet, at an expenditure of over 9,000,000 of dollars.

Supplementing the shed are warehouses occupying a land area of more than 1,000,000 square feet. Around one dock at Hamburg there are one hundred and twenty-nine cranes.

The quay wall here is of the plain, reinforced-cement type protected by wooden upright fenders. The sheds are served by the Gantry Cranes. The sheds are only for assorting the goods which are conveyed immediately to the warehouses, or removed by rail to other cities. (See page 9.)

UNION IRON WORKS A BUSY PLANT

The Union Iron Works Company is now building a large floating steel caisson for the Panama Canal, an oil tank steamer for the Associated Oil Company, one wooden oil barge with steel cylindrical tanks for the Brown Towing and Lighterage Company, three submarines for the United States Government, two large suction dredges and one small motor driven steel oil barge for the Standard Oil Company, which barge is to carry refined oil in bulk and also package freight.

The largest repair job at present under way at the Union Iron Works is the S. S. "Newport," owned by the Pacific Mail Steamship Company, which was sunk at Panama when the Government wharf collapsed. The "Newport" is being restored to her original condition.

The S. S. "Santa Clara," of the North Pacific Steamship Company, is on drydock undergoing extensive repairs, consisting principally of replacing defective timbers; S. S. "Grays Harbor" also on drydock-receiving a annual overhauling and new tail shaft; S. S. "Mexican," of the American-Hawaiian Steamship Company, also on drydock, cleaning and painting and annual overhauling; S. S. "Hyades," of the Matson Navigation Company, annual overhauling, consisting principally of retubing main boilers, main condenser and scaling the hull of the

The caisson, which the Union Iron Works is to build for the Panama Canal is 113 feet 10 inches in length, 65

feet depth, breadth 36 feet, light draft 32 feet, and extreme draft 61 feet. The sides of the caisson have curved surfaces throughout with lines like those of a ship. Along its ends, which are vertical as well as along the horizontal keel, there are heavy plate girders fitted with continuous timber cushions, which serve when the lock is pumped out for transmiting the water pressure to smooth cast iron plates attached to the masonry.

The caisson will be equipped with a pumping system for unwatering the lock chambers. This will consist of four 20-inch centrifugal pumps which will be driven by electric motors.

The oil tank steamer building on the Isherwood system of construction at the yards of the Union Iron Works for the Associated Oil Company is of the following dimensions: Length over all, 426 feet 9 inches; beam molded, 55 feet 334 inches; depth molded, 31 feet 8 inches to upper deck; gross tonnage about 5900; capacity 62,000 barrels of oil; engines 261/2-45-75

I. H. P., 2600; single screw 18 feet 9 inches diameter. Four Scotch marine boilers will be installed and the vessel will have a speed of 101/2 knots per hour.

Standard Oil Barge No. 8 is 116 feet over all; 24 feet molded beam; 10 feet 3 inches molded depth; 2060 barrels capacity; 8 feet 6 inches draft. Four singleended Scotch boilers will be installed and these boilers will be 11 feet 9 inches in length and 14 feet in diameter.

NEW RUSSIAN STEAMSHIP SERVICE.

A new steamship line, mainly for immigrants is in the course of formation and will probably be a surprise to the shipping interests. We are informed that within a short time a regular line from Vladivostock, Russia, will be operated to Vancouver, B. C., and Seattle, Washington. The Russian Government is favoring this line and has granted a number of advantages and a subsidy. Baron von Luttwitz, together with the Russian Volunteer Fleet, is interested in this new undertaking. He arrived in this country very recently, proceeding to British Columbia and the State of Washington to make final arrangements before the first ship of the new line starts. The idea is to bring into the sparsely populated districts of Canada and the northwest of the United States agricultural laborers.

The Cyclop's Steel and Iron Works, Sheffield, England, are to supply the turbine drums for the United States battleship No. 39. Their bid was \$57,436, while the bids from the Bethlehem Steel Company and the Midvale Steel Company were \$169,768 and \$160,272 respectively. The Sheffield bid includes the payment of duty.

ISTHMIAN CANAL COMMISSION Canal Zone

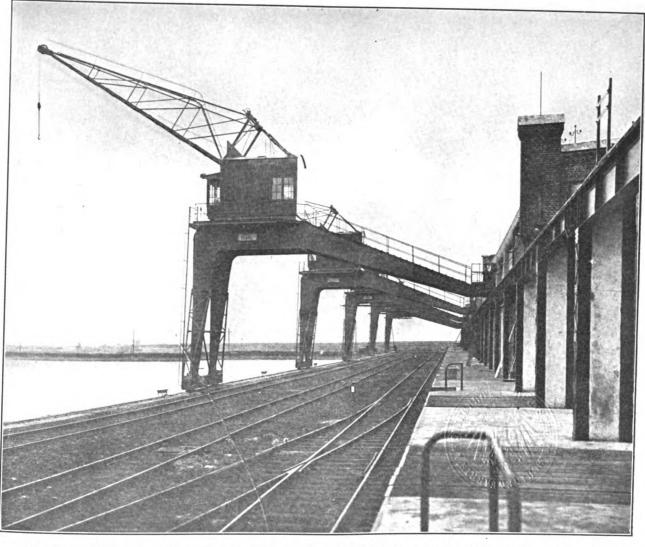
Culebra, September 2, 1913.

Mr. J. S. Hines, Publisher Pacific Marine Review, San Francisco, California.

In reply to your note of August 19th, I beg to state that it is hoped the canal will be opened to navigation by the 1st of January, 1914. This will depend somewhat upon the action of slides between now and that date, but in any event it is believed that we will be able to pass vessels of light draft by that time.

> Respectfully, GEO. W. GOETHALS, Chairman and Chief Engineer.

Operations have been begun at what will eventually be one of the largest sawmills in America, the plan of the Empire Lumber Company at Deep Bay, Cowichan Lake, Vancouver Island. When the machinery now being placed is completed this mill will cut 25,000 feet



The surface of the quay; the usual railway tracks; the shed platform; the front of the concrete and brick shed with edges of entrances protected by steel angles; another type of the half arch gantry crane, $2\frac{1}{2}$ tons capacity, with the front vertical leg, supported upon the rail on the quay-edge, and the inclined leg on the front of the shed, are in evidence for many miles at Bremen, Germany. The enormous tonnage handled at this and other ports, so quietly, easily, with comparatively few men, all tend to impress one with the wonderful results obtained by machinery. (See page 9.)

THE "MATSONIA"

The "Matsonia," a steel single-screw steamship, to be completed in October by the Newport News Shipbuilding and Dry Dock Company, of Newport News, Va., is the latest addition to the Matson Navigation Company's fleet, and will be operated in regular service between San Francisco and Honolulu, Hawaii.

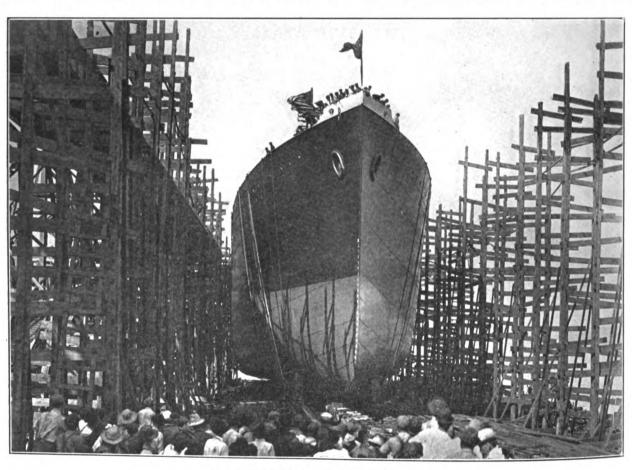
She will be equipped for carrying a large amount of cargo and also is provided with modern and up-to-date quarters for the accommodation of 246 first-class passengers and 78 steerage passengers as well as a crew of 121 officers and men.

The leading particulars of the vessel are: Length, over all, 500 ft.; length, between perpendiculars, 484 ft.; breadth, molded, 58 ft.; depth, molded to shelter deck, 44 ft. 9 inches; sea speed, loaded to 24' draft, 16 knots; cially for the carriage of bananas. The total space available for cargo is about 450,000 cubic feet, exclusive of the molasses tank.

The upper deck amidships as well as two tiers of houses above shelter deck are devoted to the accommodation of passengers. Deck officers' quarters and pilot house are located in teak house above the passenger quarters.

On shelter deck aft are located the purser's office and Marconi rooms. The seamen's quarters are located in the forecastle, while aft on upper and shelter decks are located quarters for the engineers', stewards' department,

On the shelter deck is provided a social hall forward with deckhouses aft containing staterooms opening on



S. S. "MATSONIA" LEAVING THE WAYS

displacement at 24' draft, 13,500 tons. The ship has been constructed in full accordance with Lloyd's Register of Shipping, Class 100 A1.

The machinery is located aft as on the other vessels of this line. The cargo will be carried forward of the machinery space below the upper deck and in the portion of the upper 'tween decks forward of the dining saloon. Provision is made for carrying a large supply of fuel oil, the lower part of the forward hold being arranged for fuel oil storage, as well as the double bottoms, which are made deeper than usual, and the fore peak. Amidships in the hold is a tank for carrying over 200,000 gallons of molasses, with pumping plant adjacent. This tank is also arranged for carrying fuel oil on emergency. A large space on the lower 'tween decks is fitted up for carrying refrigerated cargo, and the upper 'tween decks forward is arranged espe-

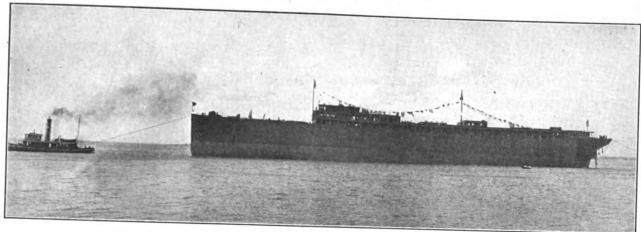
to a wide and spacious promenade extending the entire length of the vessel.

Below on the upper deck and well forward is the dining saloon; aft of which are first-class staterooms, pantry, galley, and farther aft are spaces for steerage passengers.

On the bridge deck forward is the smoking room and aft of same are located additional staterooms; wherever possible, arranged in suites.

For the safety of those on board, watertight subdivision is provided by a cellular double bottom-5' 6" deep extending full length between peak bulkheads as well as by seven transverse watertight bulkheads.

Ballast is provided for in the cellular double bottom which is sub-divided into tanks aft for the storage of fresh water, while forward the space is devoted to the storage of fuel oil.



S. S. "MATSONIA" AFTER LAUNCHING

The vessel is constructed on the ordinary transverse frame principle-10 in. channels being spaced, 28 in. centers in general, except somewhat closer in forehold, and in fore and aft peaks where 8 in. channels are spaced 24 in. on centers. Three side stringers are fitted in holds to either side. The floor plates in cellular double bottom are fitted on every frame. The deck beams vary, 8 in. channels for main deck, 7 in. channels for upper and shelter decks and 6 in. angles for the bridge deck, fitted to every frame, while in bridge deck house, 4 in. angles are spaced 30 in. on centers.

Two rows of wide-spaced pillars and girders are adopted in holds, on main deck and on upper deck aft of passengers' quarters but throughout passenger quarters smaller stanchions are used. A bilge keel extends on each side for a length of 250 ft. amidships.

The propelling machinery consists of one four-cylinder triple-expansion engine, I. H. P. 8,500 at 80 R. P. M., with cylinders of 35 in., 61 in., and 281 in. in diameter, having a 66 in. stroke. The propeller is of the righthanded built up type with manganese-bronze blades and a cast iron bulb. The main condensers are of the independent cylindrical type.

The auxiliary machinery consists of one centrifugal circulating pump, an independent air pump, two independent direct-acting feed pumps, two 25-ton evaporators, a distiller, feed filter and heater, bilge and ballast pumps of large capacity and general service, sanitary and various other pumps. The steering gear is of the Brown Steam Tiller type and is equipped with complete telemotor control.

The ship is heated and thoroughly ventilated throughout

Electricity for lighting and power purposes is supplied by two 30-K. W. and one 50-K. W. engine driven gen-

The refrigerating plant is equipped with two 10-ton refrigerating machines with all necessary piping and cold storage rooms. Drinking water is circulated through coils to public spaces.

Lifeboat accommodation is provided for all on board by means of nine 28-ft. metallic double-ended boats and one 28-ft. wooden power boat for towing the fleet of lifeboats. In addition there will be a work boat. All are carried under Welin Patent Davits.

For loading and discharging cargo the ship is provided with two cargo ports on the upper deck and four on either side on the main deck, as well as two cargo hatches forward on shelter deck and two trunk hatches located about midships on the bridge deck. The last two will be supplied with electric elevators for the handling of sugar cargoes.

To the foremast are attached four 8-ton booms and

one 50-ton boom, mainmast four 8-ton booms, all for handling cargo, while to the mizzenmast is attached one 8-ton boom for handling engine room weights.

Steam is generated in three single-ended Scotch boilers, each 13' 6" in diameter and 12 ft. long, containing about 6000 sq. ft. heating surface, and six Babcock and Wilcox water tube boilers containing 22,800 sq. ft. heating surface.

Boilers are to carry working pressure of 230 lbs. per sq. in., but are designed and built for 250 lbs., and operate with oil fuel, mechanically atomized, under natural draft.

The oil fuel system is of the Newport News Shipbuilding and Dry Dock Company type, which has been developed by considerable experiment at the shipyard. This system has been fitted to several of their recent ships and has given extremely satisfactory results under both natural and forced draft.

An elaborate outfit of machine tools is fitted in the engineer's workshop.

The full complement of oil tanks for engine room are of sufficient capacity for carrying lubricating, cylinder, refrigerating engine oils, etc., for a 60 days' run.

Passenger Accommodation.

About midships on the upper deck are located spaces for the accommodation of steerage passengers. The rooms are large and roomy and special attention has been given to their ventilation.

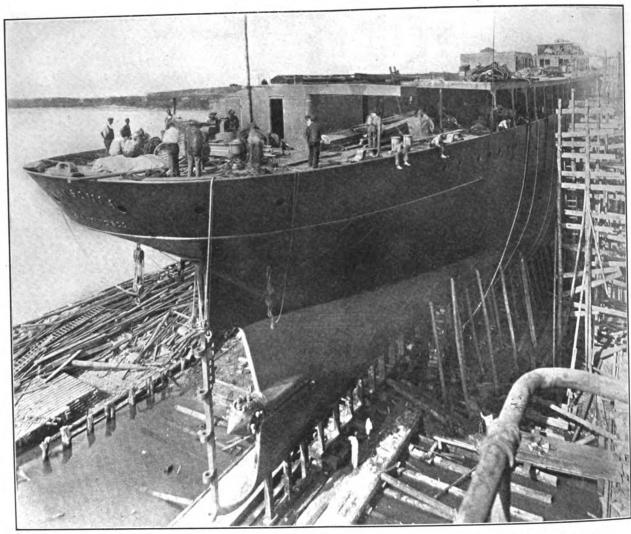
Forward of these rooms and completely separate from same are first class staterooms. These, together with the ones located in the deckhouses on the shelter and bridge decks, are paneled in a simple design in white. The white enameled berths, the mahogany furniture, the green carpet, all combine with the cretonne window hangings in giving a very cool and restful effect.

Wherever possible private baths are arranged and all rooms are arranged conveniently to bathrooms. In many cases rooms adjoining are so arranged that they may be thrown into private suites.

Ten special staterooms are provided, each with its own bath and finished in an individual style of decoration. There are two suites paneled in birdseye maple, the long panels displaying the natural beauties of the wood to great advantage. Six other rooms are paneled in mahogany with mahogany or silk tapestry panels varying in tone and color, and two are finished in white colonial, one with blue and the other with pink silk tapestry panels. The special rooms are all fitted with heavy brass bedsteads and other specially designed furniture in mahogany.

In addition to these there are eight other rooms finished more elaborately than the ordinary first class staterooms and not quite as elaborately as the special rooms.





S. S. "MATSONIA" FOR SERVICE BETWEEN SAN FRANCISCO AND HAWAIIAN ISLANDS—NEW VESSEL FOR MATSON NAVIGATION COMPANY

The officers' quarters on the bridge are neatly and tastefully treated and the captain's room forward is in close proximity to the wheel house, which is modern in every particular and fitted with every known appliance for ship control.

Public Spaces.

Well forward and extending across the ship on the upper deck is the dining-room, arranged to accommodate 206 persons at one sitting. The style of decoration is of the late Renaissance period. There is a wainscoat of mahogany surrounding the room, surmounted by a pleasing arrangement of paneling, enriched here and there by ornament in low relief. The color scheme above is carried out in a series of grays ranging from a rich warm tone to the almost pure white ceiling. Wide spaced stanchions are enclosed in mahogany richly carved, harmonizing with the carved pilasters all along the walls. The beamed ceiling is supported at these columns by carved consoles and at the forward end is the mahogany sideboard of massive, yet refined proportions. The floor is covered with Nonpareil Cork Tiling in the natural shades, completing the effect.

At the forward and after ends are alcoves which may very well serve for dinner parties, affording that privacy sometimes so much desired. The tables are small and arranged to allow all necessary space and to avoid the appearance of being crowded, as is generally the case on passenger vessels.

An innovation has been introduced in placing a buffet at the entrance to the dining saloon where one may go

between regular table settings and obtain light lunch. On either side of the dining room light enters through a series of cathedral glass windows suffusing into a warm glow over the entire room.

These sash are provided with ventilating grilles and these together with a system of exhaust ventilation will keep the room cool at all times.

Immediately aft of the dining saloon is the Stair Hall, treated in modern English. This same hall is carried up for three decks and the spacious stairways connecting same have wrought iron grilles of simple design. The walls are panelled in mahogany, large panels being used which in their very modesty, only serve to enhance the rich grain of the wood and to emphasize the beauty of the smaller carved panels, which are fitted in combination with them. Arrowlock Elastic Tiling in the green and brown tones is used as a floor covering. blending harmoniously with the mahogany panelling.

Over the stair leading to the bridge deck is the ship's clock handsomely mounted in a large carved panel.

On the shelter deck forward of this Stair Hall is the Social Hall. The style here adopted is of the period known as Empire, with mahogany panelling and gilt ornament, enriching the warm color of the mahogany and bringing out the quiet dignity of the period it represents.

Furniture quietly designed and faithful to the period and upholstered in dark green tapestry and silk brocade completes the desired effect.

. At the forward end of the social hall are alcoves filled

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SHIPBUILDERS AND ENGINEERS

with palms and ferns, bringing that touch of life and sunshine to those within. A pianola-piano is also placed at the disposal of the passengers and for use in special concerts.

Just aft of the Social Hall and to either side are the ladies' lounge and the writing room. These rooms are treated in the French style prevalent in the time of Louis Seize, which style affords an especially rich treatment of wall surfaces with panels of those light and elegant moldings common to the period. For the ladies' lounge, the color scheme is carried out in old ivory and blue, the wall panels being of a blue figured silk tapestry. The furniture is of mahogany and upholstered in a heavier tapestry of harmonizing color, and the carpet in brown gives the sufficient background to the setting. Even the silvered lighting fixtures have been especially designed and are faithful to the period.

The writing room is similar in design and style to the ladies' lounge, but its color scheme is carried out in tones of buff and golden browns. Both rooms are separated from the Social Hall by French casements and are richly hung with brocaded tapestries. A number of writing desks are provided in both rooms for the convenience of passengers.

On the bridge deck forward and directly over the Social Hall is the Smoking Room. Here the style followed is one of the early English styles of the fifteenth-sixteenth centuries—the Tudor Gothic. Arrowlock Elastic Tiling is again used here as a floor covering.

The woodwork is essentially oak, stained an antique brown, and the wall panels are enlivened here and there by carvings peculiar to the period.

The idea is carried out in the arrangement also and four alcoves are provided, with low seats facing across a heavy oak table, where one may sit, and at the alcove ends are long narrow perpendicular windows, affording an unobstructed view out over the water. The mantel deserves especial mention. Over its mantel shelf the Royal Hawaii Coat of Arms against a robe of ermine and surmounted by the tiara is carved in solid oak, making a splendid effect.

The soft tapestry window hangings add a touch of sombreness to the whole, so that one unconsciously feels the spirit of the time it is intended to represent.

It has not been the aim of the decorators to impress the passenger with a false magnificence, but rather to surround him with that quiet simplicity which goes far toward making the sea voyage the delightful event it should be.

The vessel is fitted with foundations for four six-inch guns and otherwise arranged as a vessel of the second class under the Postal Subsidy Act of March 3, 1891, to which class she is entitled on account of her size and speed.

The Matson Navigation Company very recently moved to their new pier, No. 28, foot of Spear street, San Francisco. The Matson steamers, sailing for Honolulu and Hawaiian Island ports, will depart from this pier. An illustration showing Pier 28 appears in the article "The Port of San Francisco." published in this issue.

ROYAL MAIL STEAM PACKET COMPANY.

New Service Soon to be Inaugurated.

The Royal Mail Steam Packet Company is spending \$10,000,000 for a new fleet of modern steamships, to ply across the Pacific to Puget Sound, returning to England via California and the Panama Canal.

Seven steamships are building, costing about \$1,500,000 each.

It is announced by Mr. E. J. M. Nash, American representative of the line, that the first of these vessels will leave London for this Coast, November 22. The other six will come into service as finished before the end of next year.

The new steamships will be twin screw, fourteen-knot combination passenger and freight carriers of 15,000 tons capacity. These new vessels will be better equipped than any freight vessels of the line.

For its old-established line to South America via the West Indies, the Royal Mail is building eight triple-screw steamships at a cost of approximately \$20,000,000. This line will be linked up with the trans-Pacific line at Colon. The companion line will cross the Atlantic and serve California and Puget Sound, returning via the Orient and the Suez within thirty days.

The Seattle Construction & Drydock Company presented the lowest bid for the repairs to the Norwegian steamer "Thode Fagelund," which was in collision August 24 on the Columbia River with the German bark "Thielbek." The Seattle company's bid was: 18 days, \$14,200; 12 days, \$17,100. The highest bid was by the Portland Boiler Works, 35 days, \$25,000.

S. S. "PANAMAN" NEARING COMPLETION.

According to advices received by the American-Hawaiian Steamship Company's local offices, the new liner "Panaman," now under construction by the Maryland Steel Company, will be ready for her trial trip and final delivery in October.

The "Panaman" is the fifth of eight vessels ordered by the American-Hawaiian Company from the Maryland Steel Company. The sixth, the "Washingtonian," will probably be launched late in September or early in October.

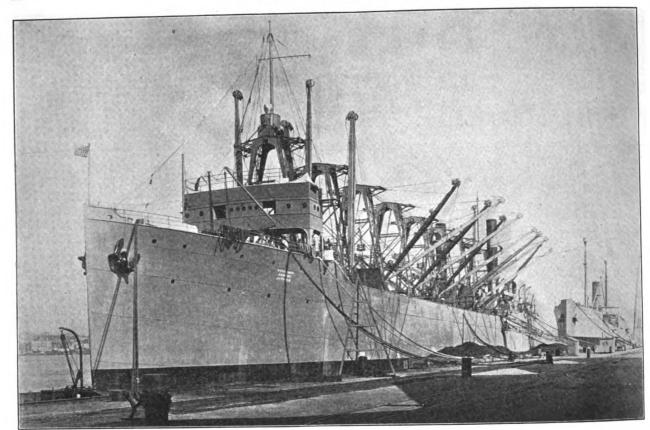
S. S. "PORTLAND" EXTENSIVELY OVERHAULED.

The Craig Shipbuilding Company, of Long Beach, Cal., is doing considerable overhauling on the S. S. "Portland." New bulkheads are being installed, her grain bins are to be divided and she will be equipped with elevators for handling bulk grain.

The pilot-house is being taken off forward and is to be placed aft in front of the smoke-stack.

The "Portland" will receive a thorough overhauling and after she leaves the Craig yards, she is to carry bulk grain exclusively, although general cargo can be carried if necessary, as the hatches and gear have been left intact.





THE "JUPITER"

U. S. COLLIER "JUPITER" BUILT AT THE MARE ISLAND NAVY YARD

The "Jupiter," which has just completed what we understand to be a very successful trial trip is 542 feet length overall, 520 feet between perpendiculars, 65 feet beam, 39 feet 6 inches depth, displacement 19,360 tons on a draft 27 feet 6 inches; speed at the above draft, 14 knots.

The vessel has a coal-carrying capacity of 12,500 tons and an additional capacity of 375,000 gallons fuel oil.

The "Jupiter" is driven by means of twin screws, power being furnished by one "Curtis" steam turbine directly connected to the generator. The current from the generator is passed to the electric motors,-one on each propeller shaft. Steam for the turbine is furnished by three Scotch marine boilers.

The appliances for handling coal cargo consist of eight steel towers, erected on the upper deck, one between each of the cargo hatches. Each steel tower carries four steel cargo booms, two booms for each hatch. These booms are topped out over the side, one port and one starboard, secured in place by the proper guys and having a steel wire span running from the head of one boom to the head of the other boom. The coaling trolley is operated on this wire span by means of two steam winches located at the foot of the towers. One winch is used for hoisting and lowering clamshell bucket, the other winch is used for traversing the coaling trolley on which the clamshell bucket is suspended,-the operation being to take coal from the hold of the collier and discharge on either side to the vessel alongside being coaled, or the operation may be reversed and coal may be taken from a vessel alongside and discharged into the "Jupiter's" holds. Thirteen sets of the above coaling gear are installed on the "Jupiter," the working capacity of each set being 100 tons per hour. Total 1300 tons per hour.

Between towers 6, 7 and 8, running in a fore and aft direction, a trolley girder is fitted, whereby coal may be taken from the "Jupiter's" after hold and discharged into the steaming bunkers, by means of clamshell bucket.

The "Jupiter" is fully equipped with steam pumps for handling fuel oil cargo, having a capacity of 400 tons per hour, the piping being arranged to take fuel oil from barge alongside and discharge into fuel oil tanks, or vice versa.

The vessel is built with a complete system of double bottom tanks, having a capacity of 1,602 tons water ballast, the topside tanks having a capacity of 1,793 tons water ballast, together with a reserve feed tank capacity of 400 tons.

The "Jupiter" is equipped with wireless installation.

CONTRACT FOR SIX TORPEDO BOAT DE-STROYERS AWARDED.

It is understood that the Secretary of the Navy has made conditional awards of the contract for six new torpedo boat destroyers, numbers 57 to 62, as follows:

Two vessels to the New York Shipbuilding Company at \$825,000 each; two to the William Cramp & Sons Ship & Engine Building Company, Philadelphia, at \$881,000 each; one to the Fore River Shipbuilding corporation, Quincy, Mass., at \$861,000 and one to the Bath (Me.) Iron Works at \$884,000.

These vessels are to be the largest of their class yet designed. They will mark a decided advance in radius of action at high speed. Increased space has been assigned for the living accommodations of both crew and officers.

The destroyers will be 310 feet long, 29 feet 10 inches

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beam, 9 feet 3 inches draft and 1,090 tons displacement. They will be oil burners exclusively and will be propelled by steam turbines.

Wants Cost Given.

With more than half a million dollars already saved to the Government through competition on contracts for materials for battleship No. 39, Secretary Daniels very recently announced that he had notified the Midvale, Carnegie and Bethlehem Steel companies that he would not accept either of their recently submitted identical bids for heavy armor plate for this vessel unless they could show him cost of production figures to justify their prices.

The three companies named have the only plants in this country capable of turning out the heaviest grade of armor plate. Secretary Daniels urges the establishment of a Government armor factory.

A well-known judge entered a restaurant. "Will you try our turtle soup, sir?" asked the waiter.

"I have tried it," said the judge, "and my verdict is that the turtle has proved an alibi."

A MARVELOUS NAVAL PARADE.

Secretary Daniels of the Navy Department announces that President Wilson will shortly issue a proclamation inviting all the navies in the world to meet at Hampton Roads in January, 1915, and pass through the Panama Canal to the Panama Exposition at San Francisco, accompanied by the United States fleet. This would be a unique event in the world's history if it is consummated, and there is no reason to doubt that it will not be.

"MARYLAND" AGAIN MAKING COAL TESTS.

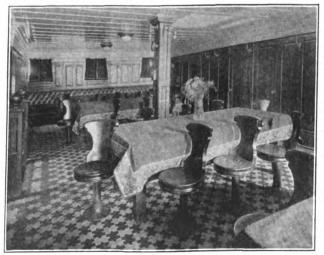
The "Maryland" is now conducting sea tests of Bering River coal, these tests to be exactly similar to tests conducted last June, by that ship, with Pocahontas coal.

In addition to this, one car-load of Bering River coal has been shipped to the Engineering Experiment Station at Annapolis, Md., for comparative evaporative test with Pocahontas.

All tests will probably be completed by October 1st, and the report submitted to Congress, as required by the Naval Appropriation Bill, 1913.

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Light, durable, nonslippery, elastic, odorless, sanitary, non-absorbent, unaffected by racking, strains or vibrations. Securely attached to iron or wood deck with Elastic Waterproof Mastic.

ARROWLOCK ELASTIC TILING IN DINING SALOON OF S. S. "SAN RAMON"

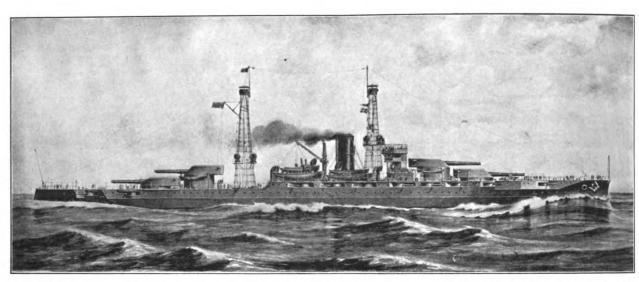
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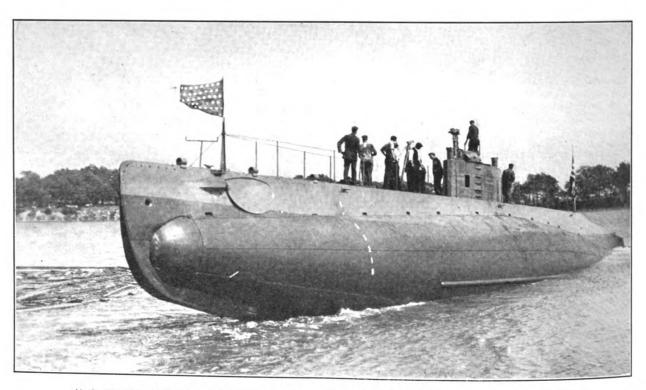
SHARON BLDG. DAVID E. KENNEDY, SAN FRANCISCO

CLEVELAND CHICAGO PHILADELPHIA ATLANTA NEW YORK BOSTON





Battleship No. 39. One of the largest battleships yet laid down for any of the great navies of the world. To be built e New York Navy Yard. Length over all, 608 ft.; breadth, 97 ft $\frac{1}{2}$ in.; draft, 28 ft. 10 in.; displacement 31,400 tons; 21 knots. The machinery of this vessel will consist of high-powered turbines, with smaller cruising turbines geared a propellers at the New York speed, 21 knots. to the propellers.



U. S. SUBMARINE K-1. LAUNCHED FROM THE YARDS OF THE FORE RIVER SHIPBUILDING CORPORATION ON SEPTEMBER 3RD

SHIPPING, ENGINEERING AND MACHINERY EXHIBITION TO BE HELD

There has been no fully representative Shipping, Engineering and Machinery Exhibition in London for many years and in view of the great importance of the Naval, Shipping and General Engineering Industries of this country, it has been decided to hold such an exhibition in the autumn of 1914. For this purpose, Olympia, the second largest exhibition hall in the world, has been taken for an exhibition to be held from September 25th to October 17th, 1914, inclusive.

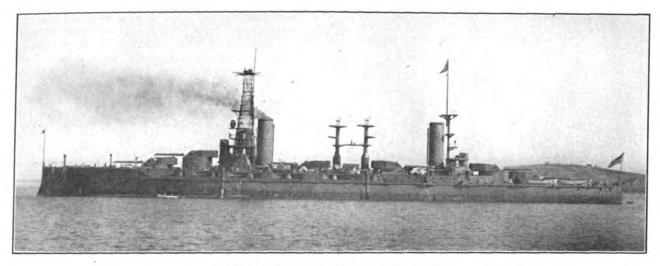
It is proposed in connection with this exhibition to

devote the main body of the hall to Naval and shipping exhibits and also important exhibits of marine and general engineering appliances, working or otherwise.

The exhibits will be sectionized under the following headings: Naval Engineering, Shipping Exhibits, Fishery Exhibits, General Marine Exhibits and General Engineering.

Plans, application forms and further particulars can be obtained on application to the Organizing Managers, Shipping, Engineering and Machinery Exhibition, 1914, 104 High Holborn, London, W. C.





ARGENTINE BATTLESHIP "RIVADAVIA"

Total % of com-

The above photo shows the Argentine battleship Rivadavia lying in Nantasket Roads, Boston Harbor. This vessel is 585 ft. long, 98 ft. beam, trial displacement 27,600, full load displacement 30,600, speed 221/2 knots; armament, 12 12-in. guns, 12 6-in. guns and 16 4in. guns.

> NAVY DEPARTMENT BUREAU OF CONSTRUCTION AND REPAIR, September 10, 1913. Vessels under construction, United States Navy.

Name, type and No. of vessel.	CONTRACTOR Battleships.	pletion. Sept. 1, 1913.
34 New York 35 Texas 36 Nevada 37 Oklahoma 38 Pennsylvania	New York Navy Yard Newport News S. B. Co Fore River S. B. Co	88.2 93.6 42.8 41.9 4.5
	Destroyers.	
43 Cassin 44 Cummings 45 Downes 46 Duncan 47 Aylwin 48 Parker 49 Benham 50 Balch 51 O'Brien 52 Nicholson 53 Winslow 54 McDougal 55 Cushing 56 Ericsson		94.7 92.8 92.0 92.0 9.2 9.3 9.1 14.7
	Destroyer Tenders.	
2 Melville	New York S. B. Co	
	Submarines.	
26 G-4 27 G-2 28 H-1 29 H-2 30 H-3 31 G-3 32 K-1 34 K-3 35 K-3 36 K-5 37 K-5 38 K-8 40 L-1 42 L-3 44 L-5 45 L-6 47 M-1	American Laurenti Co. (Pl Lake T. B. Co. (Bridgeport Electric Boat Co. (San Fra Electric Boat Co. (San Fra Electric Boat Co. (San Fra Electric Boat Co. (Guincy) Electric Boat Co. (Quincy) Electric Boat Co. (San Fran Electric Boat Co. (San Fran Electric Boat Co. (Quincy). Electric Boat Co. (Guincy). Electric Boat Co. (San Fran Electric Boat Co. (San Fran Electric Boat Co. (San Fran Electric Boat Co. (Guincy). Electric Boat Co. (Quincy). Electric Boat Co. (Guincy). Electric Boat Co. (Guincy). Electric Boat Co. (Unincy). Electric Boat Co. (Unincy).) 88.1 n.) 96.2 n.) 96.2 n.) 96.2) 70.4 90.6 88.0 .) 84.6 81.7 74.8 73.7) 75.2 .) 73.7
1 Fulton	Submarine Tenders.	Outpart) 15 6
2 Bushnell	New London S. & E. B. Co. (Seattle Construction & D. D.	Co
	Fuel Ships.	
10 Nereus 13 Kanawha 14 Maumee	Newport News S. B. Co Mare Island Navy Yard Mare Island Navy Yard	99.0 1.6 1.6
19 Sacramento	Gunboats.	49.1
20 Monocacy 16 Palos Delivered at 1913.	Wm. Cramp & Sons	64.4 64.4 64.4 13; (b) Aug. 30,

The trials of this vessel commenced with the standardization of the screws on the trial course at Rockland, Maine, on September 15th, after which the vessel returned to the works of the Fore River Shipbuilding Corporation for completion and delivery.

JOHN T. HEFFERNAN SELLS PROPERTY TO PORT OF SEATTLE.

Mr. John T. Heffernan, proprietor of the Heffernan Engine Works and the Heffernan Drydock Company, of Seattle, on September 5 sold and deeded to the port of Seattle Block 375 and the waterfront half of Blocks 376 and 386 lying on the northeast and south of the turning basin of the east waterway respectively. The well-known Heffernan drydocks have been located in this turning basin for years, using Block 375 as the land base. Block 376 has been the headquarters of the Puget Sound Bridge & Dredging Co.

Mr. Heffernan accepted \$440,000 port of Seattle general bonds, 5 per cent., which were voted at the special port election June 17. The people at this election cancelled the authorization for the so-called Harbor Island bond issue whereby \$5,000,000 was pledged to improve the northwest corner of Harbor Island, and in effect transferred \$3,000,000 of the authorization to the development of the east waterway as the major deep-sea terminal being provided at public expense.

Mr. Heffernan by contract agreed not to dispose of the bonds before May 1, 1914, and also agreed to give the port benefit of any rise in price which may result from an improved bond market up to or before that date. By this transaction the port acquires about half of the land necessary for the proposed development for which the \$3,000,000 voted was authorized.

Mr. Heffernan will remove his drydock equipment in

This purchase is indeed a very excellent one for the port of Seattle, as it so much assists in carrying out the plans for improving the east waterway.

The steamship moved slowly up the Narrows, abreast of Quarantine. There was a tremendous rattle and clank and splash. Aunt Drusilla called a steward.

"What was that, steward?" she asked.

"Nothin', lady-only dropped the anchor, ma'am."

"I thought they would," answered Aunt Drusilla dis-"They've been very careless with it. I've approvingly. seen it hanging over the side all day."-Marine Journal.



NEW FRENCH LIFE PRESERVER.

An ingenious life preserver that possesses marked advantages over the type now in use has been invented by Mr. Allain Redo an employee of the merchant marine service of Havre. It is called the "gilet de sauvetage" (life jacket), and consists of a garment of strong material of the same shape as an ordinary vest, but equipped with inflatable rubber crowns or tubes, somewhat on the principle of the water wings used by American children at the seaside.

A leather belt is attached to the vest to prevent its being unbuttoned or displaced. To the right and the left are attached the two rubber crowns which rest on the shoulders and pass under the arms sufficiently low not to interfere with the movements of the wearer. These crowns are covered with the same material as the vest. To each is attached a rubber tube ending in a pneumatic valve, which can be operated by merely blowing into it. For ordinary use the crowns are deflated and lie close to the vest, their edges being kept in place by simple clips, so that they form a part of the garment, which can be worn under a coat like an ordinary vest without attracting attention.

Inflation For Life Saving.

When the safety vest is to be used as a life preserver the wearer simply strips off his coat and blows into one of the rubber tubes, thus inflating the corresponding He repeats the operation on the other side, which gives him two-air-filled cushions capable of sustaining him above water. When inflated, the apparatus, which weighs 860 grams (1.89 pounds), supports a weight of 17 kilos (37.48 pounds) of iron, while an ordinary life preserver can sustain only 8 kilos (17.64 pounds) of metal.

Demonstrations of the practical utility of this simple life-saving invention were recently made in the Bassin du Commerce of Havre, in the presence of officials of the port. At these trials the demonstrator put the garment in and inflated it completely in one minute and 27 seconds. Jumping into the water, he was able, without moving hands or feet, to keep his head well above the surface without difficulty.

Another striking demonstration was made by a sailor wearing the safety vest, his legs tied together, and a weight of 10 kilos (22 pounds) attached to his feet. When dropped into the water he was able to keep above the surface without difficulty.

To prove the resistive strength of his device, the experimenter climbed into the shrouds of a vessel and leaped into the water. He reappeared quickly on the surface and it was found that the apparatus had not suffered any injury from the violent shock sustained. The remarkable buoyancy of the apparatus is shown by the fact that three persons can be maintained above water if one of them is equipped with it, thus proving its utility in case of a shipwreck where all are not provided with life preservers.

This life preserver is not yet on the market. Its inventor intends to perfect it, and for this purpose is testing other supple tissues to take the place of rubber, as well as other valves capable of inflating the crowns more rapidly and preventing all deterioration by salt water.

GEARED TURBINE STEAMER "CAIRNROSS."

The geared turbine steamer "Cairnross," the first purely cargo steamer after the "Vespasian" to be fitted with geared turbine engines, has just completed her first round voyage to the East and back to Hull. Her owners report that the ship has done exceedingly well, and has quite fulfilled their expectations. She has proved to be a good 101/2 knot boat, and she has maintained an average saving in coal of five tons per day, as compared with her sister ships with triple-expansion engines, while the effect of the gearing has been a complete absence of racing.

The captain in his report to the owners speaks in terms of the highest praise of the ship's behavior. After discharging, the "Cairnross" will be put in the Montreal-Newcastle service.

The vessel, it may be recalled, is a typical cargo steamer of the tramp class, of the following dimensions: Length b.p., 369 ft. 9 in.; breadth, extreme, 51 ft.; and depth molded to the upper deck, 27 ft. 9 in. She carries about 7,830 tons deadweight. On her much-discussed trials with her sister-ship, the "Cairngowan," her engines developed 61.76 revolutions per minute, giving 1,570 s.h.p., and she consumed 27.8 tons of coal per day. She was constructed at Sunderland, and engined by Parsons.

It will be remembered that the type and arrangement of machinery on the "Cairnross" is the same as that on the collier "Neptune." The reduction gearing on the "Neptune" was very satisfactory, but trouble was experienced with the turbines. Turbines and reduction gear have also been installed on several of the United States destroyers with successful results.

DIESEL-DRIVEN NAVY TENDER A Twin-Screw Motor Vessel Built at the Krupp Yard

By J. RENDELL WILSON.

In view of the fact that a Diesel-engined navy tender of 1500 H. P. is now building for the U. S. A. navy, the motor vessel "Mentor," recently built in Germany for the same purpose, should be of more than ordinary interest, especially as she has been successful during the dozen or so months that she has been in service.

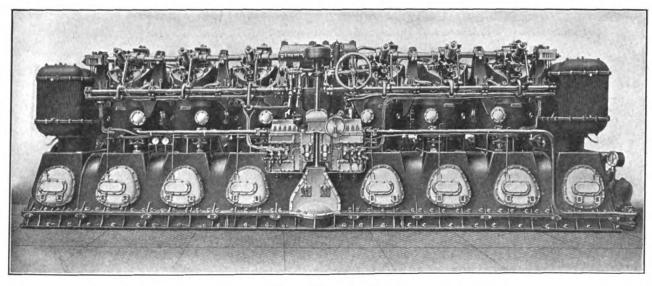
The "Mentor" was built and engined at Krupp's Germania yard, Kiel-Gaarden, and is equipped with twostroke type Diesel engines, as is the tender for the U. S. A. navy.

While agreeing that two-stroke Diesels will be principally adopted for naval craft of all classes, I believe that the four-stroke motor will eventually be generally

Port exhaust and scavenging will be adopted with large engines in order to avoid valve troubles, which are by no means small matters. By adopting the port system only fuel and air starting valves are required in the cylinder heads.

In one large marine two-stroke engine there is no fewer than four scavenging valves, and one air starting valve, and one fuel valve to each cylinder, making six in all, apart from the exhaust port, and as there are six cylinders it means that there are 36 valves and six ports to the engine. Consequently the cylinders heads can be little more than valve cages.

In view of the enormous pressure to which each cylinder head is subject to during the early part of the



1000 H. S. KRUPP DIESEL MOTOR—VERY SIMILAR IN DESIGN TO THE 350 H. P. ENGINE IN "MENTOR"

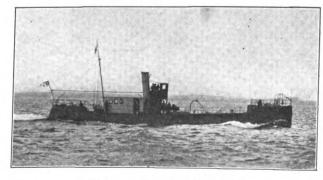
adopted for commercial craft, at least until an internal combustion turbine is perfected, which is contrary to the general opinion.

In the first case it is essential that as much power as possible shall be obtained from a minimum weight where war craft such as submarines, picket boats, fast cruisers, etc., are concerned, and so the obvious naval development lies in the two-stroke engine.

If the present difficulties are overcome the double-acting design will, of course, prevail; but although the high-powered Diesels of this class have been fairly successful on test in the workshop the results have not been sufficiently good to warrant faith being placed in their reliability at sea, and so as yet none of the 6000 H. P. sets has been installed in a vessel. Krupps; the M. A. N.; Vickers Ltd.; the F. I. A. T., and Nobels have all been engaged in experimenting with Diesels of this power for a couple of years, and no doubt much good will eventually result. It should also be mentioned that Krupps have obtained 27,000 B. H. P. from single-cylinder double-acting two-stroke oil engine.

The future two-stroke Diesel engine will be the portscavenging enclosed type. The open crank-pit design of some of the latest marine oil motors is no doubt to a certain extent due to a "bending of the knee" to owners, and by thus following the steamship practice much prejudice against motors has been overcome. Now that the Diesel is firmly established in the marine world, the open crank-pit design will most likely be dropped. combustion stroke, and especially in the event of preignition, or a stuck exhaust valve, it stands to reason that cylinder heads must be strongly constructed, and not weakened with an excess of valves.

Although the engine to which I refer has been completed for over twelve months it has not yet passed its



MOTOR VESSEL "MENTOR"

trials at sea in a vessel and has only just been installed. It develops nearly two thousand brake horse-power. After a few years' service at sea it will be most interesting to learn the results of its working.

Of course, the best and worst features of an engine can only be discovered by experimenting, and in view of the rapid development of the Diesel it is remarkable that such good results have been attained to date. The reasons why the four-stroke type will be generally adopted for commercial work are many. In the first place more experience under sea-going conditions has been obtained, as out of 75 commercial Diesel driven craft over 100 feet in length, in service at the beginning of this summer, no fewer than 45 have four-stroke engines installed. Secondly, the slightly increased weight for the power developed is equalized by the lower fuel consumption, which thus reduces the quantity of fuel to be carried for the same distance. Thirdly, the wear and strain on the working parts is much less as no scavenging pumps are required, and as there is only one combustion every two revolutions, the cylinders and

pistons have more time to cool.

To substantiate my remarks regarding the adoption of the four-stroke engine for commercial vessels I will say that Diesel engines are building with a total horse power of 102,450, apart from naval work. Of these the fourstroke type totals 68,200 H. P. as against 34,250 H. P. for the two-stroke type. One firm of four-stroke engine builders has actually on order passenger and cargo motor-ships with a power of 30,700 i. h. p. and a dead weight capacity of 83,500 tons, (two of these have now passed their trials.-Ed.) the highest powered being one of 4000 i. h. p: for the East Asiatic Co. The builders I refer to are, of course, Messrs. Burmeister & Wain, of Copenhagen. With three other vessels built by them and already in service, namely, "Selandia," "Christian X," and "Suecia," the total horse-power is 44,200, or more than all the two-stroke engines under construction by all other builders together. The total tonnage of all the B. & W. ships is 124,250 tons.

To return to the motor-vessel "Mentor," which Krupps built for the German Admiralty, this vessel is 96 feet long, by 13 feet 10 inch beam, with a draught of 4 feet 13 inches, on a displacement of 74 tons. She is not a large boat but she is none the less interesting, as her machinery is of the high-speed class, very similar to that now installed in the submarines belonging to the German navy.

As is consistent with my remarks on the type of motor for naval craft her engines, of which there are two driving twin-screws, are of the two-stroke class with enclosed crank-pits. Each has six cylinders, 10 inches bore, by 12 inches stroke and develops 350 H. P. at 450 revolutions per minute. The total of 700 B. H. P. drives

the ship at a speed of 18½ miles an hour, so that the "Mentor" is one of the fastest Diesel craft affoat.

By dividing each engine into two sets of three cylinders, each set with its own scavenging pump and air compressors, reliability is practically assured. If trouble is given by the forward section of the motor, the three cylinders at the end can be disconnected. When only very low pressure is required the fuel valves of the forward halves of both engines can be cut out and the after section only run under power. Port exhausting is adopted, but the scavenging air is admitted through a valve in each cylinder head, the latter, also the fuelinjection and air-starting valves, being operated off a horizontal cam-shaft which is moved fore and aft for reversing, bringing a fresh set of cams beneath the valve rockers. The cam-shaft is driven by a vertical rod from the crank-shaft arranged between the two sets of cylinders. Here are situated the air compressors also, while the scavenging pumps are at either end.

Regarding accommodation, there is a cabin for divers right forward, aft of which is the forecastle for the crew, next being the fuel tanks. Then comes the engineroom, which contains a small four-stroke single cylinder Diesel-driven electric lighting set and auxiliary compressor in addition to the propulsive machinery just described.

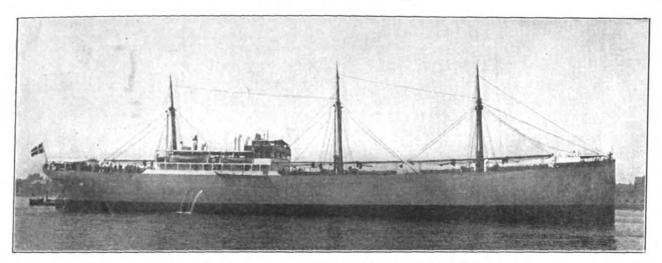
MOTOR SHIP "CALIFORNIA" LAUNCHED.

Messrs. Burmeister & Wain inform us that the first Diesel motor ship for "Det Forenade Dampskibselskab (The United Steamship Co. of Copenhagen) was launched the 23rd of August and named "California." This boat is built as a twin-screw ship of the awning deck type and is of the following dimensions:

Length between innerside of stem and stern-	
post on load line405'	0"
Breadth molded	0"
Depth molded to awning deck	111/2"
Draught	3"
D. W. capacity) tons

The "California" is to be fitted with two 8-cylinder main engines of the 4-stroke type which develop in total 2700 I. H. P.

It is intended to let the ship go on the route between Copenhagen and New Orleans.



MOTOR SHIP "PEDRO CHRISTOFFERSEN"

A New Vessel With Four-Stroke Diesel Engines of 2000 B. H. P.

What may be considered a remarkable instance of the strides that have recently been made in the development of the Diesel oil engine for marine work, is to be found in connection with the construction of the new motor ship "Pedro Christoffersen," built for the Redericktiebolaget Nordsjernan, of Stockholm, by Messrs. Burmeister and Wain, for service between Europe and South America.

The vessel successfully carried out her official trials on August the 1st last, and immediately "sailed" to Sweden, where cargo for her maiden voyage was taken aboard.

In connection with the trials the noteworthy feature is that the engines were only tried once in the ship before the official run, which shows that both the owners and builders had absolute confidence in the machinery. This, in a great measure, is probably due to the fact that this vessel is the second for the same owners, being a sister of the M. S. "Suecia," and the sixth large Diesel-engined ship to be delivered from the Burmeister and Wain yard in two years; also that these two are a little smaller and lower powered than the other four craft.

The rapid manner in which the builders are enabled to turn out these vessels is causing considerable favorable comment among shipowners, and is doing much to remove the lingering prejudice existing in some districts against Diesel marine machinery. The "Selandia," the first of the above mentioned six craft, is continuing to give very excellent results in service, and already has made half a dozen return voyages from Europe to the Far East, i. e., Siam.

From time to time scandalous rumors have been circulated regarding her running, but so far the engines have run like clock-work, and the only troubles met with have been of a very minor nature, such as any new steamship would have, and these have been chiefly in connection with the auxiliary machinery. The repairs have been so minor that the engine-room staff has been capable of dealing with them while the ship has been in service. Her owners, the East Asiatic Co., are, I hear, very pleased with the vessel, and are constantly placing orders for new motor craft with the same builders.

The "Pedro Christoffersen" is a twin-screw vessel, and is in every respect a complete motor-boat. Her general dimensions are as follows:

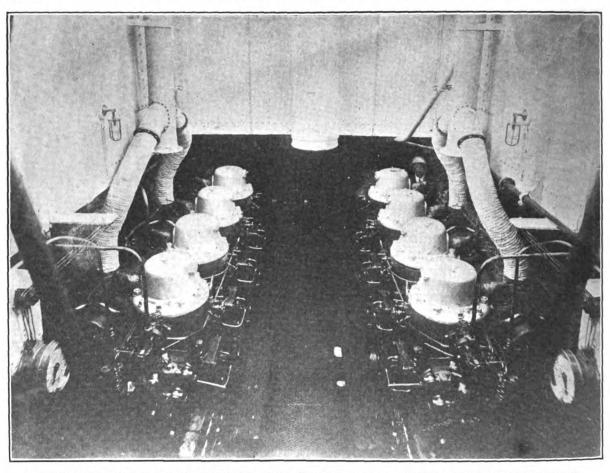
Length, over all	3	62	ft.
Length, between perpendiculars	36	50	ft.
Breadth51	ft.	3	in.
Depth from shelter deck		34	ft.
Moulded depth25	ft.	6	in.
Draught23	ft.	1	in.
Deadweight capacity in tons		6,	520
Total indicated horse-power		2,3	300
Speed in knots		10	3/4

There are two Burmeister and Wain main oil engines directly coupled to the propeller shafts, each having eight cylinders, 500 mm. (1934 in.) bore, by 660 mm. (26 in.) stroke. Each is of the single-acting fourstroke class, with enclosed crankpits and forced lubrication, and is directly reversible, with crossheads and trunk-piston combination. There is little need to give a complete technical description of these motors as they resemble those in "Selandia" and other B. and W. craft; but a few general details will be of interest to those not familiar with the design. To each cylinder there are four mechanically operated valves and one automatic air pressure blow-off safety valve. The former are for air inlet, exhaust, air maneuvering, and fuel injection, respectively, and each is actuated by a long hollow pushrod from the horizontal cam-shaft. Reversing is by sliding the cam-shaft, a small air-driven lay shaft raising the push-rod rollers clear of the cams to allow of the shaft being moved fore and aft. Each engine is arranged in two groups of four cylinders, each group having the cranks set at 180 degrees, with the two groups at 90 degrees to each other, so that in the diagram of turning moments, the maximum is about 1.35 times the mean, thus the result is even and eliminates vibration.

The arrangement of the auxiliary machinery, too, is very similar, and this consists of two 200 b. h. p. fourcylinder non-reversible Diesel four-stroke engines driving dynamos, which supply current for all minor engineroom machinery, the steering engine, fans, anchor windlass, and a number of electric cargo winches. To each of the 200 h. p. engines can be coupled, by means of a clutch, an air compressor which charges reservoir tanks to 20 atmospheres for starting and reversing the main engines. From these reservoirs the air is taken to a high-stage compressor driven off each main engine and compressed to 60-65 atmospheres for the injection of fuel.

On the official trial the consumption of fuel was but

176.5 grams (6-17 ounces) per brake-horse-power per hour, including the consumption of all the power used for driving the auxiliary machinery such as compressors, steering gear, electric light, etc., so may be considered very low indeed. The oil used as fuel was of poor quality, with a heating value of only 9900 calories per B. T. U. After the vessel has been in service for some months the fuel consumption may be brought even lower.



ENGINE ROOM OF "AH KWANG" FITTED WITH TWO 240 B. H. P. REVERSIBLE BOLINDER ENGINES

SIMPLICITY IN MARINE MOTORS

With the more general development of the application of the internal combustion engine to marine service, it becomes more and more important that progress should be made toward the elimination of some at least of the complication that undoubtedly exists with the majority of

The gas engine hardly enters into the scope of this article, as its use is, generally speaking, limited to the smaller installations, but with the advent of the Diesel engine the field for the marine motor has been enormously enlarged and this phase of marine development now calls for the earnest attention of engineers and ship-

owners alike.

The Diesel engine, both of the four- and two-stroke types, is long since a proved success for power-producing purposes on land, and up to very large units is, in Europe at any rate, rapidly replacing steam, owing to its exceedingly economical operation and self-contained nature. The value of the Diesel engine for electrical generating purposes can hardly be exaggerated, and this value is enhanced by the fact that the installation can be split up into small units, enabling each to be run at full load, i. e., at its most economical output. Again opportunities for inspecmost economical output. Again opportunities for inspection, valve changing and for making the numerous adjustments necessary to these engines are of frequent occurrence with land installations, and this, apart from the presence of every facility in the way of lifting tackle, engine-room space, etc., etc., makes it a comparatively simple matter to keep the engine up to its maximum efficiency.

In the case of the marine installation, however, conditions are by no means as favorable, and it becomes a matter of the utmost importance that all unnecessary complication be done away with, both as a means of saving labor and space and also to eliminate as far as possible every feature which gives a further possibility of breakdown, which possibility naturally increases in direct proportion to any increase in the number of working parts.

A failure of the engine on land will, at the worst only, result in a loss of time and money, whereas at sea, such failure may result in the loss of the vessel itself. Consideration must also the loss of the vessel itself. sideration must also be paid to the fact that the marine engine has to run day and night for long periods, and under varying loads, apart from being subjected to all kinds of stresses due to the movement of the vessel in which it is installed. These two facts, added to the necessity for high cylinder pressures and fine working clearances, show that the marine engine is liable to more

clearances, show that the marine engine is liable to more sources of trouble than the land type.

Again, to the shipowner, every foot of space is of the utmost importance for cargo-carrying purposes, and this often results in the engine-room space being so cut down as to cause a considerable amount of trouble and loss of time in carrying out repairs and adjustments

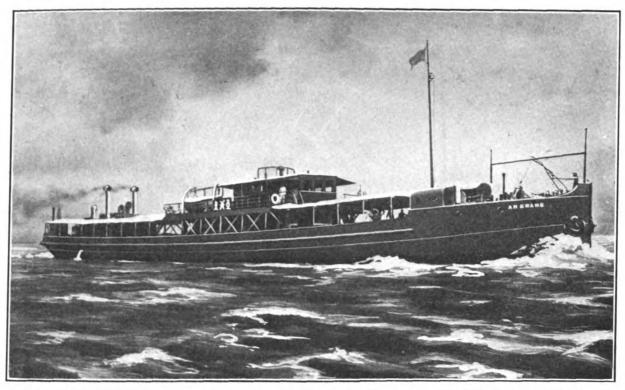
An added complication with the marine engine is also the necessity for embodying in its construction some form of reversing arrangement and in addition to the high-pressure air supply, the need of auxiliary air compressors in case of failure in the main supply.

It will then be seen that although there is greater need

It will then be seen that although there is greater need for simplicity in the marine motor than in the one used for stationary purposes, in actual practice there is considerably more approximately in the formula of the considerably more approximately in the formula of the considerably more approximately in the formula of the constant of the consta

siderably more complication in the former.

The direction in which improvement may perhaps be looked for is shown in the success that is being made with the numerous types of "Hot Bulb" or, as it is frequently termed, Semi-Diesel engine, in European markets. This engine in its simplest form is of the two-stroke type and burns the same fuel as that used in the Diesel. type and burns the same fuel as that used in the Diesel, though the fuel consumption is slightly higher. It differs in the main from the Diesel engine in two important points:



"Ah Kwang," built at Taikoo Dockyard, Hongkong, for the Asiatic Petroleum Co. The "Ah Kwang" is 220 ft. long, 32 ft. beam, and is fitted with two 240 B. H. P. Direct Reversible Bolinder Engines. The Windiass, Dynamo, General Service Pump and Air Compressor are also driven by Bolinder Engines. Tarakan Oil is used as fuel.

Firstly, in the fact that it does not rely entirely upon high compression to ignite the fuel charge and secondly, that with very few exceptions it is independent of any high pressure air supply. The method of operating this engine has been so recently explained in these pages as to make it unnecessary to do more than give the merest outline of its working by stating that the fuel is injected into and ignited by the hot bulb, which bulb requires heating before the commencement of a run, the heat generated in the engine itself being sufficient to keep the erated in the engine itself being sufficient to keep the tmperature in this bulb high enough to ignite the fuel.

The engine is valveless, scavenging being accomplished by means of air which is drawn into and compressed in the crank chamber being admitted into the cylinder through ports which are opened by the piston, and driving out the waste gases through the exhaust ports on the opposite side of the cylinder. This method is found to be absolutely reliable and the absence of complication will be readily understood when one realizes that there are no working valves, no air compressor, and that to reverse the engine it is merely necessary to alter the point of fuel the engine it is merely necessary to alter the point of fuel admission. These engines, power for power, weigh only one-half of the ordinary four-stroke Diesel and can be far more easily operated. Owing to the absence of the valve gear the cylinder covers can be removed in an exceedingly short space of time. ly short space of time.

The fuel and lubricating pumps are the only external working parts on the engine, with the exception of the circulating water and bilge pumps.

Comparing the photograph of the engine-room of the "Ah Kwang." which is typical of an installation of this character, with a Diesel installation, the absence of complication in the former type will be very readily seen and it is regretted that at the present time the largest single unit "Hot Bulb" engine that has been built is only 320 horse-power though there seems every reason to be-320 horse-power, though there seems every reason to believe that larger engines will be built in the near future which would do much to lessen the objections made against the internal combustion marine motor on the score of complication.

Operation of the Panama Railroad and its steamship service to New York will be continued after the opening of the Panama Canal without change from the present system, except such as the exigencies of traffic may require, according to a recent resolution of the board of directors of the controlling company.

"KNICKERBOCKER" HAS HARD TRIP.

The auxiliary fishing schooner "Knickerbocker" was towed into Port Townsend, August 20th, after a voyage from Boston, covering 148 days.

Punta Arenas was reached sixty days after leaving Boston. When entering the Pacific, June 5, however, severe northerly weather was encountered and the starboard propeller lost. The engines were crippled so badly as to be useless, and the "Knickerbocker" was driven south of Cape Horn, from where the voyage north was made under sail. A succession of gales kept the vessel back until well up the South American coast.

The "Knickerbocker" is 100 tons net register, 126 feet in length, twenty-six feet beam, and has a depth of sixteen feet. She is fitted with two 100-horsepower oilburning engines. She is commanded by Capt. Robert Lathigee. The "Knickerbocker" was sent out for the New England Fisheries Company, and will join the Seattle fishing fleet.

KEEPING TRACK OF TRAINS.

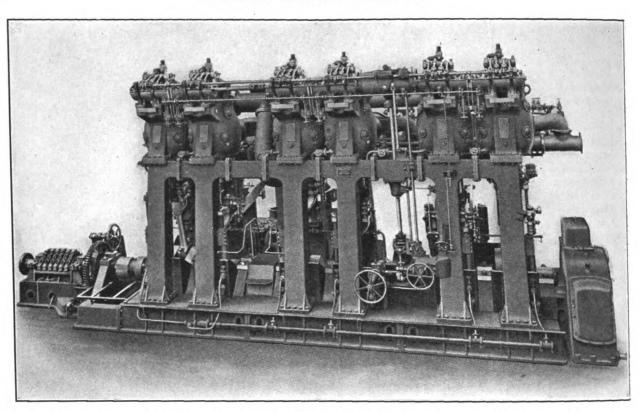
At the railway station in a small town a solitary traveler was waiting for the day's only train. Train time came and went, but no train. He went over to the station master, an old darky: "Say, when does today's train get here, anyway?"

"Oh, dat train won't be in for a long time yet."

In a few minutes, however, a train was seen crawling toward the station.

"There comes the train now!" exclaimed the traveler, exultantly, to the darky. "Seems to me you don't know your business, if I'm not mistaken.'

"Say, mister," replied the darky, "I reckon you's a perfect stranger around here. Dat's yesterday's train, dat is. To-day's train won't be in till tomorrow."-Harper's Magazine.



SIX CYLINDER DIESEL ENGINE EXHIBITED AT THE INTERNATIONAL EXPOSITION IN GHENT, BELGIUM, BY MESSRS. USINES CARELS FRERES

The engine shown in the above photograph was exhibited by Messrs. Usines-Carels-Freres at the International Exposition in Ghent, Belgium.

This Exposition engine has 6 cylinders, diameter 20", stroke 36", and is rated at 2250 I. H. P., 130 R. P. M. The engine as displayed at the Exposition has since been sold to the British Navy in connection with a duplicate of same, which is now building at the Works of Usines-Carles-Freres, the two to be installed on a large naval fuel oil tank ship.

The engine shown above is connected to a propeller and is exhibited in operation for the benefit of all interested visitors, and has shown records of being able to reverse from full speed ahead to full speed astern in six seconds.

In addition to this engine, there were shown in the same Display Room: 1-4 cylinder, 1000 H. P., 2 cycle Carels stationary Diesel engine direct connected to an alternator, which was in continuous operation serving electric current for lighting and motors in the Exposition. There was also shown a multi-cylinder, 4 cycle, Carels-Diesel engine, used for electric power stations. A single cylinder, Carels, horizontal, 4 cycle Diesel engine, used for industrial power plant work, was also shown.

Reverting again to the photograph of the Carels marine engine shown, the features of great interest to the marine engineers are that it is an open frame engine with all working parts on the outside, of the most simplified design possible and following very nearly the lines of marine steam engines; the base, frames, and cylinders are in separate section castings, thus permitting of greater ease in handling and building up the engine in the ship.

In the construction of these engines, a special study has been given to the metals for the cylinder liners and cylinder heads, which are subject to high temperatures and strains, with a view of providing not only a reliable engine in operation, but one of long life.

SHIPPING AT VANCOUVER, B. C.

After three weeks of comparative quiet along the water-front at Vancouver, the docks once more present an appearance of activity, and if there is not an extraordinary industrial hum in the city to warrant special notice, there is at least something doing in shipping

The British steamer "Vestalia," Captain Pattie, arrived at Vancouver, B. C., on August 25th, after an uneventful passage across the Pacific. This vessel is owned by Messrs. Gow, Harrison & Co., of Glasgow, and is under charter to the Royal Mail Steam Packet Co., which latter company maintains a service to the Pacific Coast, via the Orient. Some of the European cargo was discharged in the East, and Oriental commodities taken for discharge at Vancouver. Her complement for the "Terminal City," including direct shipments from Europe, is 600 tons.

The Blue Funnel liner "Cyclops" arrived in port on September 5, and is discharging 4,000 tons of general cargo at the Evans, Coleman wharf. She will take away, inter alia, about 100,000 cases of salmon for the U. K.

The Hamburg-Amerika steamer "Brisgavia," Captain Ernst, arrived on Sunday, September 7, and discharged about 1,000 tons at the Johnson wharf. She took 700 tons out, and on Wednesday, September 10th, sailed for Seattle, Tacoma and Portland, thence for home ports.

On Monday September 8th, the four-master barkenof Manila, completed her discharge, in the tine "Alta," stream, of New South Wales coal for Messrs. Evans, Coleman & Evans, Ltd., and went into drydock for overhaul and painting, after which she will load a cargo of lumber at Hastings Mill, for South African ports.

The East Asiatic Co.'s chartered steamer "Lord Lonsdale," arrived on Wednesday, September 10th, bringing some 4,000 tons of cargo, principally iron and steel.

BRITISH COLUMBIA COAL SHORTAGE.

During the winter of 1912-13 Vancouver experienced a serious coal famine owing to the closing of the principal coal mines of the Province on account of labor troubles. It was thought that the differences between strikers and mine owners would be settled prior to the 1913-14 season, but the strike has assumed still more serious proportions on Vancouver Island, necessitating calling out the militia, and the mining towns being placed under their control. Unless a settlement is accomplished in the near future, the coal famine this coming winter will be of a much more serious nature than before, as Vancouver will depend entirely upon the importations from the State of Washington.

It is rumored that a strike is possible among the miners in the State of Washington, in which case a serious condition of affairs would result. Local companies supplying the domestic trade are issuing circulars to their patrons suggesting that the winter's supply of coal be laid in now, in view of the possible shortage in a few months. Some time ago, on account of the strike, the coal supply concerns at Nome, Alaska, chartered two vessels to bring their winter supply from Australia, and the coal has already been delivered. The Nome supply is ordinarily obtained from the mines on Vancouver Island. Owing to the distance necessary to bring this coal, the price will probably be higher. In anticipation of the expected shortage a cargo of coal has also been received in Vancouver from Japan, for use by the local gas company.

CANADA'S SHIPPING SUBSIDIES.

The Canadian Government will pay \$2,238,600 during this year in subsidies to steamship companies. For this sum, the mails are carried free, and freight and passenger service maintained on the ocean and coastal routes for the development of foreign and domestic trade.

The principal service is that on the Atlantic between Canada and Great Britain. Under a new contract made this year, the Government is paying \$1,000,000 annually for a tri-weekly service performed by twelve steamships, in place of \$600,000 a year for a weekly service by four steamships as formerly. As previously stated in The Pacific Marine Review this new contract includes the Allan Line, the C. P. R., the Canadian Northern and the White Star-Dominion lines.

The most important contract on the Pacific is that between Vancouver and Hong Kong, China, with calls both ways at Yokohama, Japan. This service is performed by the Canadian Pacific Company, the yearly subsidy being \$225,000, of which Canada pays \$125,000 and Great Britain \$100,000.

A subsidy of \$180,000 yearly is paid for a monthly service between Vancouver and Auckland, New Zealand, 6,866 miles.

The subsidized steamship service having the longest route is that between Canada and New Zealand, via the Atlantic, the distance between terminal points being 15,-650 miles, for which the annual subsidy paid is \$120,000.

Preparations are being made for immediate work on the construction of the Canadian Northern Pacific Railway line on Vancouver Island from Patricia Bay to the union terminals at Victoria, for which contracts were awarded recently. The same contracts cover the link of road between Mile 4.7 out of Victoria and the union station. This link was left unfinished when the general construction work on the island was begun.

C. P. R. WILL NOT OPERATE EMPRESS SHIPS ON VANCOUVER-SAN FRANCISCO RUN.

We have been advised by Mr. G. M. Jackson, General Passenger Agent at San Francisco for the Canadian Pacific Railway, that the report is absolutely incorrect that the C. P. R. will place their two transpacific liners, the "Empress of India" and the "Empress of Japan" in service between Vancouver, B. C., and San Francisco, Cal.

MONTREAL FIRM TO CONSTRUCT SECTION THREE OF THE WELLAND CANAL.

The contract for section three of the new Welland Ship Canal was let to the firm of O'Brien & Doheny, of Montreal. The contract price is \$9,540,050.

Section three is the most difficult in the plan of the new canal. It extends over something more than two miles at the town of Torold and its construction necessitates a great deal of rock excavation. There are three locks in this section The first section of the new canal along Ten-Mile Creek from Lake Ontario is already under contract to the Dominion Dredging Company.

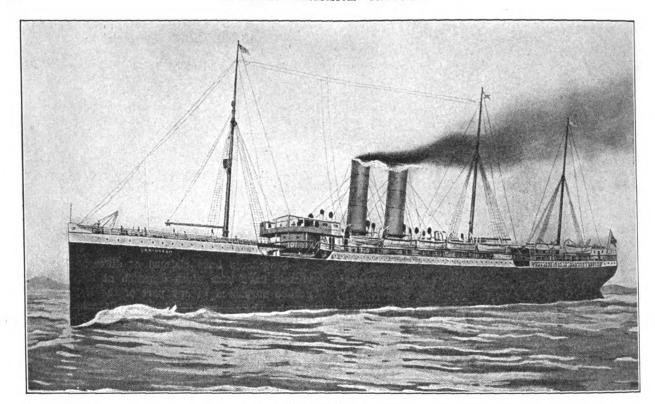
C. P. R. WANTS FOUR NEW SHIPS.

The annual report of the Canadian Pacific asks approval for the purchase of two intermediate steamships for the Atlantic trade, 500 feet long, 64 feet beam, 11,600 gross tonnage, 15 knots speed, to cost approximately £300,000 each, and two steamships for the Pacific Coast service, 395 feet long, 54 feet beam, capable of making 221/2 knots per hour at sea, and to cost approximately £200,000 each. The two Atlantic steamships are also urgently required for second and third class passengers and freight traffic between European ports and Canada, and the two fast passenger steamers for the Pacific Coast will further improve the service for the large and growing passenger business between Vancouver, Victoria and other ports on the Pacific Coast.

It is said that the great traffic and earnings of the Canadian Pacific Railway show what the prosperity of the country really is under normal circumstances. Canada for the last few years has enjoyed prosperity, totally eclipsing all former periods of expansion, and should temporary reaction now occur in consequence of the economic effect of the Balkans war it is evident that the country will still enjoy a high measure of prosperity in comparison with former periods of depression. The financial strength of the Canadian Pacific Railway and Canada is increasing, not decreasing, and is due to the capital expended in recent years. The good fortune of the Canadian Pacific Railway not only reflects the condition of Canada as a whole, but of the individuals comprising the country. The earnings of the Canadian Pacific Railway will soon reach still greater totals, in spite of new competitors. In twelve years the earnings have expanded 328 per cent. After so great an expansion we cannot be surprised if a reaction occurred, but the president and directors have never lost sight either of possible reaction or competition and during periods of prosperity, while bringing the physical condition of the property to the highest standard, have placed the finances so as to secure a foundation which nothing can shake.

The Blue Funnel S. S. "Ajax" is now being regularly operated in the immediate service between the Pacific Coast and Hongkong. No arrangements, however, have yet been made to allot any additional steamers to this trade.





THE "CARIBBEAN"

R. M. S. P. CO.'S CRUISING YACHT "CARIBBEAN."

The Royal Mail Steam Packet Co., Ltd., has just announced an important change in its New York-Bermuda service. The S. S. "Orotava," after a most successful and satisfactory season, sailed from New York September 17 for Southampton, taking first class passengers only, to re-enter the Royal Mail Co.'s European-West Indies-New York service. She has been replaced in the New York-Bermuda service by the palatial cruising yacht "Caribbean," an illustration of which appears herewith.

The "Caribbean" is specially fitted for tourist traffic on lines somewhat similar to those which have found so much favor with the traveling public in the case of the "Arcadian," which during the past two winters has performed the New York-Bermuda service with so much enhanced comfort to travelers.

The leading characteristic of the R. M. S. P. Co.'s steamers is luxury of passenger accommodation, and this feature is prominent in their special cruising yachts. Luxury is, however, never allowed to interfere with the primary consideration of safety, and on board the "Caribbean" ample boat accommodation is provided for passengers and crew to the limit of her capacity. In the "Carribean," accommodation has been reserved for 333 passengers, all first-class, in a large number of single and two-berth rooms. An orchestra is carried to enliven the voyage and a notable feature is the glass enclosed lounge and promenade permitting the passengers to enjoy the sight of the ocean from the deck in any condition of weather. The "Caribbean" is a vessel of 5,688 tons gross, 420 ft. long b. p., 49.8 ft. beam and 25 ft. deep. She has a cellular double bottom extending 320 ft. of her length and triple-expansion engines, having cylinders 381/4 in., 611/2 and 100 in. by 66 in. stroke; steam at 160 pounds being supplied by four double-ended boilers.

The placing of the "Caribbean" in the Bermuda service is in keeping with the policy of progress followed by the Royal Mail Steam Packet Co. throughout seventy-four years of experience.

NORTH GERMAN LLOYD HOLDS DIRECTORS' MEETING AND DECIDES ON SERVICE VIA THE PANAMA CANAL.

A meeting of the Board of Directors of the North German Lloyd was held on September 5, the results of the first half of the current year being presented.

Considerable progress was shown in comparison to the same period of 1912, and which was mainly due to the increased traffic on the lines to North America and the largely increased business to South America. Better results were also shown on most of the other lines, with the possible exception of the Australian Imperial Mail service.

In addition to this, there was increased profits from other undertakings, still further improving the financial position of the company.

Negotiations are still under way with the Government for the renewals of the Imperial Mail service contracts.

The North German Lloyd has decided to continue their present two-weekly passenger service to the Far East and will also take up the purely freight steamer service abandoned some time ago.

The main line to Australia, which has been carried on under great losses, will be discontinued after the expiration of the present contract if the Government will not grant sufficient compensation for its continuance and the consequent necessary additional expansion.

The lines to the South Sea will be continued against corresponding compensation and will be developed accordingly.

The Board of Directors have decided to place contracts for four additional freight steamers of 12,000 tons capacity each, a sistership of the S. S. "Columbus" and a sistership of the S. S. "Berlin." The S. S. "Grosser Kurfuerst" is also to be rebuilt into a first-class pleasure steamer.

A service through the Panama Canal is contemplated as soon as that waterway is opened to traffic.

The above information was contained in a cablegram received by Mr. Robert Capelle, General Pacific Coast Agent of the North German Lloyd, with headquarters at San Francisco, and is therefore authentic.

FREIGHTS AND FIXTURES

The following interesting freight report has been compiled by Messrs. Page Brothers, 310 California street, San Francisco.

September 19, 1913.

Great activity has shown itself in freights since our last report on the 25th of August and the list of available steamers has dwindled rapidly, there being today only about nine or ten on our list, and about half of them for November and early December as against thirty odd a month and a half ago. Naturally we may look for an improved demand and better rates for the rest of the year. The following have been fixed:

Str. "Queen Louise," bunkers at Puget Sound, where she now lies, and comes to San Francisco to load a full cargo of brewing barley to the United Kingdom at 37/6, St. Vincent for orders, for account of Westrope & Co., London.

Str. "Lord Lonsdale," chartered by Balfour Guthrie & Co., at 38/9, St. Vincent for orders from Puget Sound, with option of loading general cargo at San Francisco @ 42/6; freight to Liverpool or to London direct.

Str. "Claverley," taken for wheat from Portland, St. Vincent for orders; United Kingdom or Continent @ 37/6 by Kerr Gifford & Co.

Str. "Hartington," same business, but at 36/3 by Balfours.

Str. "Epsom," same as above, but at 37/6 by M. H. Hauser.

Balfours also have chartered a large sailer, "Orotava," @ 35/. from the North to Cork for order United Kingdom or Continent if wheat and 36/3 if barley with wheat stiffening.

Ten steamers of the United States coal fleet have been fixed for grain for northern loading and one from here since the 14th of July last. Others of the large fleet have taken lumber as shown here, viz:

S. S. "Harlesden," by Grace & Co. @ 5/. on the D/W, delivery and redelivery West Coast, one round voyage September loading.

S. S. "Strathairly," now at Honolulu, proceeds in ballast to Newcastle, Australia, taken by Davies & Fehon @ 5/101/2d or D/W, delivery Newcastle, Australia; redelivery Sydney/Pirie Range.

Str. "Largo Law," chartered by A. F. Thane & Co., at 46/3d. per 1 M feet board measure, to load redwood from Eureka and yellow pine from San Francisco to Melbourne, Australia.

Str. "Border Knight," taken by Pacific Export Lumber Co. @ 5/. on time charter, delivery Portland; redelivery China or Japan.

Str. "Indramayo," by Royal Mail Line @ 4/6, delivery Portland; redelivery China.

Str. "Craighall," by Pacific Export Lumber Co. at 4/9, delivery Portland; redelivery China.

Str. "Strathdee," chartered by Hind, Rolph & Co. on private terms, coal from Japan to San Francisco, and then on time charter either to Australia with lumber or Orient with ties.

Str. "Harpalyce," taken by Davies & Fehon of Sydney for two round trips @ 5/3 on the D/W, delivery Newcastle; redelivery Sydney or Newcastle.

Sail tonnage also has been active. For West Coast, South America, schooners "Defiance," "Alvena" and "Resolute" have been fixed @ 42/6 per 1000 feet, to direct ports in Chile or Peru, as also schooner "Commerce" and "W. T. Patterson" from Grays Harbor. Schooner "C. S.

Holmes" is to load a full cargo of ties from Eureka to Peruvian or Chilian ports, taken by Slade Lumber Co. Of the above vessels loading at the North, Grace & Co. took the lead with three; Comyn, Mackall & Co., one and Mohns Commercial Co., one.

For Australia Gibson & Co. have chartered two vessels @ 42/6 Sydney, 52/6 Melbourne or Adelaide from the North, one for Dec./Jan./Feb. and one for April/May 1914. Hind, Rolph & Co. took "Bainbridge" for New Zealand, while Grace & Co. re-chartered schr. "Wm. H. Talbot" @ 47/6 from Comyn, Mackall & Co. for Brisbane.

For Africa only one vessel has been fixed, namely, "British Yeoman" from Puget Sound or Columbia River on private terms.

For United Kingdom "Golden Gate" was fixed @ 80, per 1000 feet from Puget Sound, and "Holt Hill" @ 82/6. Both these vessels would have preferred grain but were forced to take lumber on account of the temporary decline caused by the sailing ship "Orotava" accepting 35/. for wheat homewards.

We almost forgot to mention six Japanese steamers chartered to carry wheat flour to Japanese ports at about \$4.00 per ton or slightly under the regular liner rates viz: "Senjo Maru," "Tambo Maru," "Shinbo Maru," "Hadsan Maru," and "Yasukuni Maru." They are, one and all, bringing Japanese coal to this port to fill the vacuum caused by the strike at Nanaimo, which shows no signs of being declared off.

The Moore & Scott Iron Works announce the removal of its offices and city shops to 678 Second street, between Brannan and Townsend streets, San Francisco, where its new shops, just erected, are located. Moore & Scott's shipyard and drydock are located at Oakland.

CONTRACT AWARDED FOR DREDGING MARE ISLAND CHANNEL.

Mr. R. A. Perry, of Oakland, California, has been awarded the contract for dredging a 30-foot channel beginning at the 30-foot contour at the entrance of Mare Island Strait, his bid for this work being \$197,000. As this bid is less by \$46,000 than the appropriation made by Congress for the improvement, which contemplated a channel only 400 feet in width, Secretary Daniels will ask for authority to expend the balance of the appropriation, increasing the width to 600 feet.

The "General Description" contained in the specification is as follows:

"The work consists of dredging a 30-foot channel beginning at the 30-foot contour at the entrance of Mare Island Strait, to be 600 feet wide at the bottom opposite the outer end of Dike 14 and extending to the 30-foot contour near the magazine wharf, where the width at the bottom shall be about 550 feet, covering a distance of about 3,200 feet; also a channel 400 feet wide at the bottom, 30 feet deep, from the 30-foot contour north of the magazine wharf to a point opposite the south end of the receiving-ship wharf, a distance of about 6,000 feet in the center. Also a basin 1,000 feet wide at the bottom and 30 feet deep, beginning at a point opposite the northerly end of the navy yard quay wall and extending to a point opposite the northerly end of the receiving-ship wharf, a distance of about 4,100 feet, from which point it shall diminish in width to connect with the 400-foot channel above mentioned. Also the removal of a portion of Commission Rock."

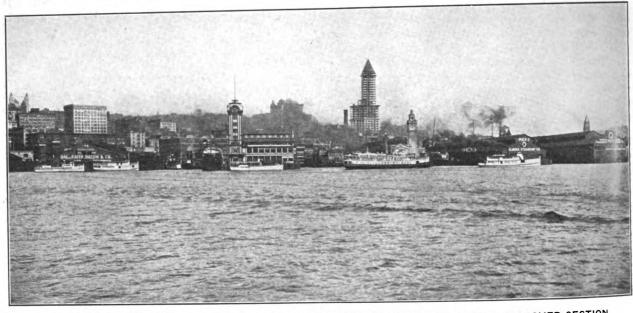


PORT OF SEATTLE GETTING READY FOR THE OPENING OF THE PANAMA CANAL

The Port of Seattle Commission was organized less than two years ago. Within that time it has formulated a comprehensive plan for the development of the port and crystallized its ideas in regard to the general policies of construction and operation. The initial improvements have been determined upon and submitted to the voters, who authorized bond issues totalling \$6,300,000 with which to execute the work.

that is, the outer (tidal) harbor and the inner (non-tidal) harbor. The outer harbor within the Port District proper has a shore line approximately 70 miles in length. To this ten miles will be added upon the completion of the Duwamish Waterway which is being constructed at a cost of approximately \$2,000,000.

The inner harbor, including Salmon Bay above the lock and Lakes Union and Washington, has a shore



LOCAL AND COASTWISE ACCOMMODATIONS—VIEW SHOWING A PORTION OF THE IMPROVED SECTION OF SEATTLE'S HARBOR

The dock improvements are five in number, designated

as f		orized Cost
I.	Smith's Cove Project\$1,6	000,000
		350,000
		350,000
IV.	Central Waterfront Project	750,000
V.	East Waterway Terminal Project 3,6	000,000
	\$5,	950,000

Adding the \$350,000 authorized for ferry boats, the total amounts to \$6,300,000.

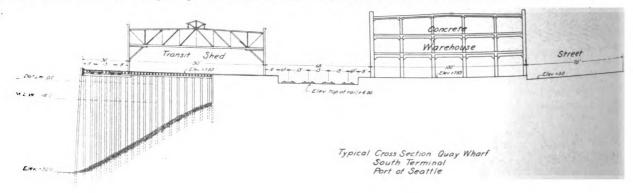
A detailed description of these projects will be more clearly understood following an outline of the general scheme for the improvement of the port of Seattle.

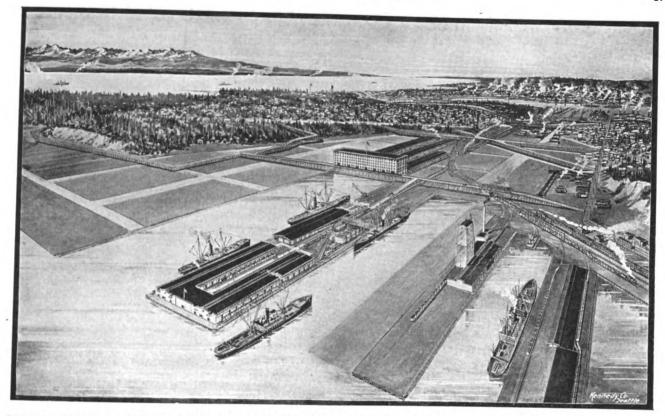
Upon the completion of the Lake Washington Canal which is being constructed at a cost of approximately \$5,000,000, there will be two principal harbor divisions,—

line approximately 100 miles in length, making in round numbers close to 200 miles of shore frontage within the Port District on the Seattle side of Puget Sound. The initial improvements, except the Salmon Bay project, are in the outer harbor fronting on Elliott Bay. At the south end of Elliott Bay is the Duwamish Valley and reclaimed tide land district suitable for industrial and railway yard purposes. At the northerly end of the bay is Smith's Cove, connected with Salmon Bay and the adjacent level lands by the interbay draw, which is also suited for industrial and railway purposes. The inevitable result is a north and south harbor terminal.

Between these two sections immediately in front of the retail center of the city is a three-mile reach now used and destined to be further developed as the local and coastwise section of the harbor.

The improvement program provides for initial construction in each of these three districts as follows:





NORTH TERMINAL—BIRDSEYE VIEW OF SMITH'S COVE DOCK. G. N. RY. COMPANY'S DOCK AND ELEVATOR ON THE RIGHT. SALMON BAY IMPROVEMENT IN BACKGROUND. AUTHORIZED COST OF COMBINED PROJECT \$1,350,000

1. North Terminal:

Smith's Cove Project.

Salmon Bay Project.

Extensive railroad yards and facilities are situated in the Interbay draw between the two projects.

2. South Terminal:

East Waterway Slip.

East Waterway Terminal.

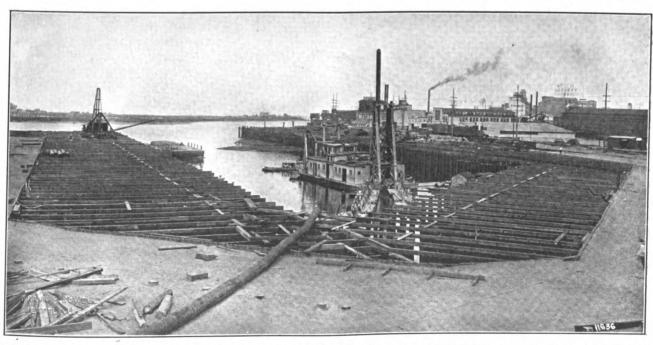
Nearby are large railway yards advantageously located with reference to the proposed docks and warehouses.

3. Local and Coastwise:

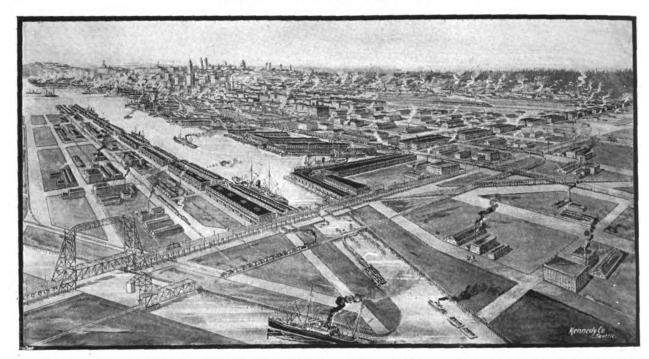
Central Waterfront project in connection with which there is to be erected a fireproof general warehouse, also a cold storage building.

North Terminal: Construction work is now in progress at both the Smith's Cove and Salmon Bay projects. The Smith's Cove dock or pier when completed will be a half mile in length and 310 feet in width. The central portion of the pier will be filled. On either side overhanging the rock-rivetted slopes will be creosoted pile wharves. Creosoted piling has been adopted in the wharf construction on account of the following reasons:

1. With a given capital the facilities provided will be



EAST WATERWAY SLIP. SHOWING DREDGING AND SUBSTRUCTURE ABOUT COMPLETED, READY FOR ERECTION OF SHEDS. LENGTH OF SLIP 800 FT. AUTHORIZED COST \$850,000



BIRDSEYE VIEW FROM TURNING BASIN, LOOKING OUTWARD. AUTHORIZED COST OF COMBINED PROJECTS, \$3,850,000 TERMINAL.

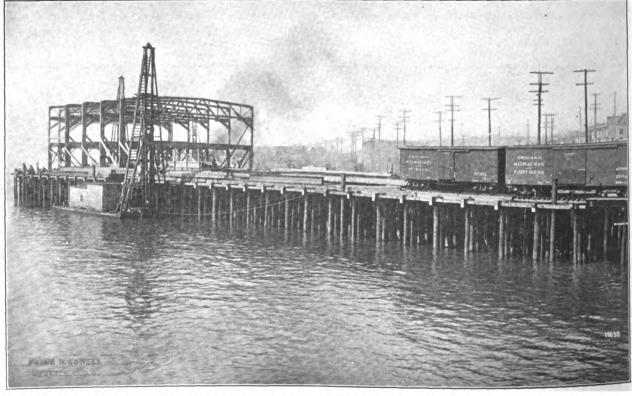
nearly double those obtainable in concrete construction. 2. The permanency of concrete structures in sea

water is yet somewhat problematical.

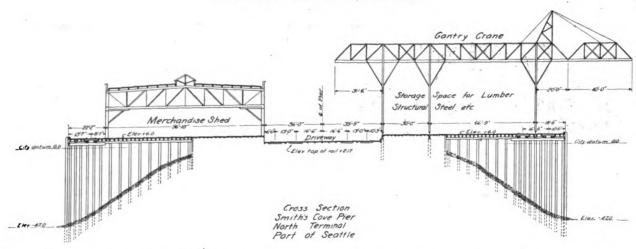
3. In this, the formative period in the development of Pacific Coast shipping, it is not certain that the facilities planned now will meet the requirements of the next generation, consequently the less permanent but cheaper wharf structures may prove an advantage twenty years hence.

The Smith's Cove pier is designed primarily for the handling of heavy commodities such as lumber, structural material, rails, machinery, etc. At the outer end will be located two general merchandise sheds each 600 feet in length. Back of these on one side will be a dry lumber, shed equipped with a mono-rail telpherage system, and on the other side will be an uncovered lumber yard, also space for structural steel rails, etc. The handling equipment will include a large gantry crane, also a 15-foot locomotive crane.

The Salmon Bay Project will not be fully improved until after the completion of the Lake Washington Canal in 1915. At present a portion of the site is being improved by the construction of a fishing boat terminal on a large scale.



CENTRAL WATERFRONT PROJECT. SHOWING 400 FT. WHARF STRUCTURE ON SOUTH FACE; TWO STORY SHED FRAMING BEING ERECTED. AUTHORIZED COST \$750,000



South Terminal: The South Terminal scheme contemplates the improvement of the East Waterway, which is a mile and a quarter in length. On the east side, including the East Waterway slip, now 60% completed, will be provided shipping facilities especially designed for such traffic as is destined to or from the existing wholesale district. On the west side will be constructed a mile long quay wharf designed more particularly for the trans-shipping business. Back of the transit sheds and parallel therewith fireproof storage warehouses will be constructed on the solid ground. Some method of telpherage or conveyage will be provided connecting the sheds and warehouses. A cold storage warehouse with a capacity of 2,000 cars of apples is being designed to be located at the turning basin or inner end of the waterway. An extensive system of tracks will insure proper railway service for the docks and warehouses.

Local and Coastwise: The Central Waterfront dock is now well under way. It is in the form of a quay wharf with a slip frontage at each end. At the northerly end a motor-boat basin is being provided in which will be 1200 feet of float frontage. The dock will accommodate anything from a rowboat to an 800-foot liner, but is more especially designed as city water gate where products may be received for local con-

sumption or shipped to local Sound and coastwise points. In this connection it is proposed to operate it in close conjunction with the public markets of the city. The enclosed area back of the wharf structure is to be filled, and on it erected a five-story concrete structure, enclosing a general produce and merchandise storage warehouse at one end and a cold storage warehouse at the other. The wharf sheds will be two-story structures, both floors of which may be reached by teams and trucks.

Work is now in progress in each of the three sections of the harbor. Some of the facilities will be ready for use before the end of the year and all of the projects will be completed early in 1915.

The additional frontage classified as to uses will be as follows:

Deep sea	17,456	lin.	ft.
Coastwise and local	4,030	,,	,,
Motor and fishing boats	220	,,	,,
	23,686	,,	,,
The existing dock frontage is	47,935	"	,,

or 131/2 miles of dock frontage which will be available in 1915.

IMMENSE DRYDOCK FOR BOSTON

The Directors of the Port of Boston (a body created by an act of the State Legislature in 1911) at a meeting on December 24, 1912, voted unanimously to appropriate the sum of \$3,000,000 for the purpose of constructing a drydock on the commonwealth's flats at South Boston; also that their chief engineer be requested to prepare a project for improvements at South Boston necessary for the building and operating of the drydock with estimates of cost.

The site chosen for the dock seems to be a good one as it is alongside of the main ship channel and in close proximity to the new State pier, which is being constructed by the same body. A foundation of solid rock is also available. The Directors of the Port have secured a tentative agreement with several of the transatlantic steamship lines whereby an annual rental of \$50,000 for the use of the drydock will be paid to the Port Directors. One of the Government civil engineers, formerly stationed at the Charlestown Navy Yard, has been assigned to assist the Port Directors in the construction of this dock.

The Committee on Maritime Affairs of the Boston

Chamber of Commerce has given a great deal of consideration to this subject and has long been on record as in favor of a modern first-class graving dock suitable to contain the largest steamers now using Boston or likely to in the future.

It is also the opinion of this committee that the drydock should be so constructed as to allow for an increased length when needed.

THE NEW GLADSTONE DOCK AT LIVERPOOL.

The new Gladstone Dock at Liverpool is 1,020 feet long, 120 feet wide at the entrance, and carries a depth of water over the sills of 46 feet at high water of ordinary spring tides. This dock is the first installment of a scheme involving the expenditure of \$16,000,000. The proposed work includes also an entrance lock over 870 feet in length and 130 feet in width, and in the inside dock area there is to be a half-tide dock of 1434 acres, two branch docks each 400 feet wide, with a pier between them over 1,300 feet in length. A more detailed description of the Gladstone Dock, with illustrations, appeared in the June issue of the Pacific Marine Review.



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OUR GOVERNMENT AND OUR SHIPS.

What a comparison between the assistance the Japanese Government gives to its shipowners and the burdens the United States Government imposes on those endeavoring to make the operation of American ships in the foreign trade a profitable business.

Our patriotism is given a fearful jolt when we realize that the only steamship company flying the American flag in the foreign trade out of San Francisco is barred from the Panama Canal while its foreign competitors are allowed to use this waterway which American brains have made possible and for which we Americans have had to pay.

New routes will be inaugurated by foreign owners from Japan and China to New York, while we sit idly by and wonder if our Representatives and Senators who have the power to help, in fact remedy, such matters will remain spell-bound with admiration at the accomplishments of our foreign rivals on the high-seas.

The American flag is not maintained as it should be in either the Transpacific or Transatlantic trades. However, many of the great companies operating under foreign flags in these trades are owned and controlled by Americans. Now, just where does Congress benefit? If the American cannot operate his ships profitably under the American flag, he sails them under that of a foreign nation and we lose our flag on the high seas but in return for this, what is gained?

Is it possible that our navigation laws cannot be revised so that our ships can be operated as safely and as profitably as those of foreign nations?

This is what the Pacific Mail Steamship Company, whose vice-president and general manager made such a really heroic but alas unsuccessful effort to at least secure justice from the United States Government at the last session of Congress, has to contend with at the present time. This is the competition they are compelled to meet:

Toyo Kisen Kaisha, subsidized by Japanese Government, *\$1,340,000 gold per year.

Osaka Shosen Kaisha, subsidized by Japanese Government, *\$605,000 gold per year.

Nippon Yusen Kaisha, subsidized by Japanese Government, *\$238,000 gold per year.

(*See report U. S. Commissioner of Navigation, 1909.) Think of our Government awarding the contract for

the carriage of the Transpacific mails to one of these Japanese steamship companies! It would seem that we are living in a too enlightened age for this sort of thing but somehow or another our Senators and Representatives have never given shipping matters the care and study they should receive. After all has not our country two glorious stretches of shores washed by the Atlantic and Pacific Oceans and should not issues connected with water transportation be of paramount importance? Probably some day when our other resources are exhausted an awakening will come but just now it seems that those that should remedy these deplorable conditions are too busy with other things, doubtlessly, in their estimation, of more weighty nature.

Again we are made to sit up and realize the injustice which shipping matters receive. The shipmasters have for sometime past been fined for any opium found on board of the vessels of which they had command but this is all to be changed now and the shipowners themselves are to be fined. If anyone is negligent in this respect, it is the United States Government, in as much as they are to see that their laws are obeyed and a shipmaster or shipowner is not responsible for contraband goods found aboard his vessel.

If our Government cannot stop the shipment of opium into this country, what can a shipmaster or a shipowner do to prevent it? A shipmaster has his own business to take care of in the operation of his ship and the safety of his passengers and how can it be possible for him to search every passenger boarding the ship or search everywhere aboard the vessel in his endeavor to locate some hidden opium. It would be a rather extraordinary thing if a ship should meet with an accident and if the master, when called before a body of men appointed to pass judgment, would state that he was performing his duty in searching the ship for concealed opium and had to leave more important matters to the care of his subordinates.

Why are such ridiculous laws made and enforced?

Is an engineer on a train responsible for contraband goods found in the baggage car? If so, we fear there would be a great many railroad accidents during the course of a year. A man in charge of human lives needs every ounce of his vitality to protect his valuable charge and cannot have his mind burdened with the thought that he is apt to lose three or four hundred dollars (representing two or three months' salary) on his arrival at port for a matter which he cannot help and for which he is therefore not responsible. On the other hand, a ship is the only means of transportation from the Orient to our shores and therefore if opium is to be sent here, it naturally will have to come by water, in as much as the airship hasn't yet attained sufficient perfection to enable it to make a flight over the routes now taken by our Transpacific liners.

Why should anyone but the guilty be fined or punished for bringing contraband goods into our country?

If opium is not to be admitted into this country, all good and well, but it is up to the United States Government to see to this and to appoint efficient representatives to find whether its laws are obeyed.

If, as at present, the Secret Service men cannot place the blame where it belongs, is it not most unjust to fine those who know nothing of the existence of the tins of this dream producer on board their vessels until they are informed that so many tins have been found aboard such and such a liner?

After all is it a crime to own and operate a vessel in the foreign trade? A shipowner or shipmaster is doing nothing further than this and should not be blamed for

the Government's shortcomings in either not providing sufficient men of their own to be on the lookout for opium or not providing men who are shrewd enough to be of some assistance in running down those who are really guilty. If it is right and just to fine a shipmaster or shipowner, it is equally right and fair, if not more so, to fine the secret service men themselves. They are paid to prevent opium from entering this country-our shipmasters and shipowners are not.

The following, which is extracted from the Thirteenth Financial and Economic Annual of Japan, should be read by our Senators and Representatives, in as much as it shows how important a matter shipping is regarded by foreign nations:

Japan's Shipping, Navigation and Harbor-Works.

As a country like Japan, which is surrounded on all sides by sea, must depend for the development of its domestic industries and advance of its foreign trade solely upon the development of its navigation, the Japanese Government had long made efforts to protect and encourage navigation, and at length in March, 1896, issued the Navigation Encouragement Law, under which Japanese subjects, or trading companies whose partners or shareholders are all Japanese subjects, engaging in freight and passenger traffic between Japan and a foreign country or between foreign ports in iron or steel steamships with a gross tonnage of not less than one thousand tons and a maximum speed of not less than ten knots, which must be entirely owned by them and registered in the shipping register of the Empire are granted a navigation subsidy in respect of such vessels according to the distance run by them and their tonnage. this law was, by Law No. 15 entitled the Ocean Service Subvention Law, promulgated in March, 1909, abolished after the last day of December of the same year. Under the new law, Japanese subjects, or trading companies whose partners or shareholders are all Japanese subjects engaging in transportation business receive navigation subsidies according to mileage, tonnage, speed, and age in respect of steel steamships with a gross tonnage of not less than three thousand tons, a speed of not less than twelve knots, and not more than fifteen years old, which have been registered in the shipping register of the Empire. Such vessels may be made to run regularly, for a period of not more than five years, on the five ocean lines, namely, to Europe, North America, South America, Australia, and Java.

At the end of 1912 the registered gross tonnage of Japanese steamers was increased to 1,430,329 tons and that of sailing vessels to 441,039 tons, making a total of 1,871,368 tons.

Turning next to the shipbuilding industry of Japan, we find that it had already made steady progress when the Shipbuilding Encouragement Law and the Shipbuilding Regulations came into operation in 1896; and the industry has since advanced with remarkable energy. The encouragement given by the Government in the matter has been so great that by the end of 1912 there were altogether 112 vessels of 700 gross tons and upward built in Japan, aggregating 340,559 tons. Under such circumstances shipbuilders have been successful in building big warships and large ocean liners which are fully qualified to run on many important foreign service lines, and they have, moreover, built vessels to foreign orders. By the end of 1912 there were altogether 228 private shipyards and 58 private dry docks in Japan.

With respect to harbor-works in Japan, after Yokohama and several other localities had been selected as open ports in the Ansei era (1854-59), they were fitted for use as commercial ports merely by taking advantage

of their natural features in making suitable accommodation for the purpose; but with the progress of the nation its foreign trade annually increased, and ships came and went in such great numbers and the merchandise they brought and took away reached such a large volume that the existing accommodation became inadequate; and so its extension and improvement came to be planned after a careful consideration of the actual condition of harborworks in the various countries of Europe and America.

At present Japan possesses thirty-seven open ports, but the bulk of its trade is carried on through the two harbors of Yokohama and Kobe. Yokohama celebrated in July, 1909, the jubilee of its opening to foreign trade, while Kobe is 46 years old. Their progress is an index of the striking development of the whole country.

ALASKAN WATERS DEPLORABLY NEGLECTED.

When the steamer "State of California" was sunk at Gambier Bay in August last, carrying down with her over thirty human lives, another "uncharted" rock was located, and the question naturally arises as to how long the United States Government will depend on the wrecking of vessels and loss of life to locate the hidden perils of Alaskan waters.

Alaska is the source of immense wealth to the United States. Its output of gold is large. Its timber and coal, as yet untouched, are of great magnitude and its fishing interests, still in infancy, are growing yearly. A trip through the "inside passages" of southeastern Alaska is equaled only by a trip through the fjords of Norway and Sweden and is a lure to tourists throughout the world.

The time will come when that country will be reached by rail but at present the only communication is by water and to properly exploit its wealth, the proper charting of its waters is an absolute necessity. Gambier Bay had been surveyed but at the place where the "State of California" struck the chart showed deep The inside passages are full of surprises. many places the coast is bluff, deep water existing close to the land, yet in this deep water pinnacle rocks are found which reach nearly to the surface and are a menace to navigation. The fact that say thirty fathoms are found in one place and twenty fathoms in another some feet distant does not prove that between the two points there are between twenty and thirty fathoms and it is probably due to some such assumption that the rock on which the "State of California" struck was not located.

The Dominion Government has done much to safeguard the Canadian waters but the United States Government has done but little for Alaska notwithstanding repeated appeals by shipowners and masters. One captain has made the statement that if in the night he can see two lights he is certain that his vessel is in Canadian waters whereas if no lights can be seen he can be equally certain that he is in Alaskan waters.

There is no reason why the steamers of the coast survey should not be constantly employed in sounding the waters of the Alaskan coast in order that proper charts may be published and distributed, and there is equally no reason why sufficient lights and buoys should not be established in order that navigation may be less hazardous. Twenty-five years ago Alaska was practically unknown. A few canneries, a mine and some whaling stations represented its industries, but today there is a large fleet of steamers plying its waters in both summer and winter. New canneries are being located and new industries springing up, all of which call for water transportation and it is the duty of this Govern-



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ment to provide the necessary safeguards. Insurance rates for Alaska business are now high and if it is necessary that a steamer be badly damaged or sunk in order to locate a hidden menace the rates will become prohibitory, and freight rates must be made such that shipowners may be able to continue in the business even without insurance. The United States is drawing great benefits from Alaska but these would be greater if the waters were faithfully charted and guarded.

UNITED STATES AND CHINESE GOVERNMENTS NOT THE MASTER AND OWNER TO BLAME.

One of our subscribers sends an interesting contribution regarding opium smuggling and where the blame for it should be placed:

Editor Pacific Marine Review:

Dear Sir:—I note by the daily press that Collector of the Port J. O. Davis has addressed a letter to the Treasury Department at Washington urging a change in the law which now penalizes masters of steamers on which opium is found. This letter was accompanied by a list of the steamers which had brought in this contraband, or rather on which it had been discovered and the fines which had been assessed which aggregate over \$65,000.

Twenty-nine times have the deputies made the discovery and of these Pacific Mail steamers have been the delinquents twenty-two times, while steamers of the Toyo-Kishen-Kaisha have been caught but five times. As the law stands at present the masters of the steamers are liable for the fines (in the case of one steamer the fine imposed was over \$19,000) and as yet no steps have been taken either to collect or remit them and the Collector asks for instructions as to what action he shall take.

The present law was passed something over a hundred years ago when vessels were small and the captain was able to and did give careful supervision to the loading of the cargo. Hiding places were comparatively few, voyages were long and during the passage the master with efficient officers could make a thorough and exhaustive search for contraband. In the present day with immense liners making express time, loading and discharging night and day on both sides of the steamer, with hundreds of coolies passing in and out and with large forces in the various departments, most of the members of which are willing to run a risk in order to make a little easy money, it is utterly impossible for the master to give such personal supervision as to make it even difficult to smuggle the small tins of opium aboard. The law is absurd and should by all means be repealed.

Mr. Davis suggests that the owners of the vessels should be made liable for the fine imposed with the idea that by so doing they would give the question more careful consideration which might result in stamping out the evil. He states that the Toyo-Kisen-Kaisha pays a bonus to any member of the crew discovering opium on board. It is true that if the owners were called upon to pay the fines imposed they might and probably would make still further efforts to stop the smuggling but it is very doubtful if they would be successful and certainly it will never be entirely stopped without the efficient aid of the governments concerned, and the remedy seems to be with them.

China has done a great deal to stop the exportation of opium and the United States is doing much to prevent it being landed in this country, but with, as has been shown recently, corrupt deputies who not only wink at but actually assist in the landing of the opium, and with

undoubtedly corrupt Chinese deputies who turn their back, it is difficult to see how either the master or the owners can put a stop to the practice. Crews and laborers are constantly changing but deputies are appointed and can be removed only for cause. If the two governments should work together: if they should choose their deputies with care and then give them that supervision which all good business demands; then, and not until then, will the smuggling of opium be reduced to a minimum.

The fault is neither with the master or the owners but lies primarily with the governments and the remedy also lies with them. Let the proper remedy be applied and not burden those who, of necessity, can not help themselves with fines that are as ridiculous as they are useless.

CAPTAIN T. H. CANN EXONERATED.

The local inspectors of the United States Steamboat Inspection Service at Seattle recently rendered their decision regarding the loss of the S. S. "State of California" and in which, we are glad to note, Captain Cann has been completely exonerated.

The following is extracted from this decision:

The steamship "State of California," of 2266 gross tons, The steamship "State of California," of 2266 gross tons, built at Philadelphia, in the year of 1879, owned by the Pacific Coast Steamship Company, home port San Francisco, and valued at somewhat upwards of \$200,000, in command of T. H. Cann, Jr., on a voyage from Seattle to Skagway and way ports, southeastern Alaska, with freight and passengers (passengers 74, officers and crew 72), on the morning of August 17, 1913, at about 8:29, while leaving Gambier Bay, struck a rock which caused her to sink in the short time of about three minutes. The ship was immediately headed for the beach, some 500 yards distant, and as she took the bottom, listed 500 yards distant, and as she took the bottom, listed heavily to port and sank, sliding down the rock incline and finally resting in some 58 fathoms of water. The vessel and cargo became a total loss, nothing whatever of value being saved with the exception of five damaged lifeboats, a number of rafts and, we believe, the compass or chronometer which was found floating in the wreckage from what was the pilot house or chart house. Of the 74 passengers on board, 50 were saved, 11 bodies were recovered and 13 missing, undoubtedly lost; seven of the crew are missing, making a total of 31 passengers and

It is claimed by the master and substantiated by the second officer, R. D. McGillivray, acting pilot, who was second omcer, R. D. McGillivray, acting pilot, who was on the bridge with the master, which statement is further substantiated by members of the crew who were in a position to judge, that the vessel was following the usual track near midchannel, which same course, as nearly as practicable, had been passed over by this same vessel some sixteen times previous, and the same track or course followed by other vessels passing in and out of the same port of call.

out of the same port of call.

It is well to note that at the time of striking, the tide was at extreme low, or nearly so, and, furthermore, that the "State of California" was of deeper draft than any other vessel that had ever entered this place. At the time of the agrident the draft was 18 feet 6 inches. time of the accident, the draft was 18 feet 6 inches.

Immediately after striking, the master realizing that
the vessel had undertail. the vessel had undoubtedly received a fatal blow, and knowing that the chance of beaching her in such a position that she would not be entirely submerged in a shore space of time, gave the signal to man the boats,

heavy port list from which the vessel never recovered, one boat, No. 3, in charge of the chief engineer, was the only boat that succeeded in clearing the wreck as she foundered, as all the other boats were more or less damaged by falling and floating wreckage. Beyond doubt, the majority of persons who lost their lives were injured in the maelstrom of wreckage coming to the surface. surface

which signal was responded to promptly. Owing to the

We believe that the system of boat drills, as conducted on board the "State of California," was good, as each member of the crew in his sworn testimony appeared to know in which boat he belonged and where the boat to which boat the boat to which boat the system. boat to which he was assigned was located, also the



method of getting the same overboard. It is not surprising that so few of the crew were able to reach their respective boat stations, as some of them were in bed, some at breakfast, and the rest attending to their daily

Mr. Henry Finch, an experienced and well known diver, was dispatched from Seattle to the scene of the wreck, and at the place designated by Captain Cann as nearly as possible, as the place where the vessel struck, located jagged pinnacles of rocks, with a depth of water of 16 feet, or 15 feet 10 inches, as Captain Cann measured it, which location is in close proximity to the 121/2 fathom mark as shown on the chart. We are of the opinion that Captain Cann, from previous passages through this channel and from markings on the chart, had reason to believe that he could pass with safety at any stage of the tide.

As to the conduct of the master and the officers at the time of and after the disaster, all of the

passengers and also the unlicensed members of the crew who have testified before this Board, are undivided in their statements that in their opinion all was done that in human power could be done towards saving life and minister to their opinions. ing life and ministering to their wants after reaching shore. We have heard no word of censure from any source, which fact, in view of other investigations of marine disasters, appears marvelous.

After collecting all data available and of merit bearing upon this case and giving the same due consideration, we are of the opinion that Captain Cann, master of the "State of California," on August 17, 1913, exercised all caution and judgment that could reasonably be expected in passing in and out of Gambier Bay. We, therefore, find no grounds for bringing charges against Captain Cann.

BION B. WHITNEY, ROBERT A. TURNER, Local Inspectors.

THE "WIRELESS" AND ITS RELATION TO INSURANCE

The above was the subject of an article appearing in the September issue of this publication, which has aroused a good deal of interest.

"A Shipowner" sends his views concerning "Wireless and Its Relation to Insurance." This is a fair answer to our contributor of last month. We should like to extend this discussion with reference to the schedule of salvage charges suggested in the following:

"From the standpoint of one who pays premiums on marine insurance I cannot agree with the writer of the article, "The Wireless and Its Relation to Insurance," wherein he gives the idea that it has never been shown that the use of wireless has resulted in a direct saving to the underwriters. The author freely admits the humanitarian value of wireless in saving life, yet in the same sentence illogically tries to show its uselessness in saving property.

It is quite true that the addition of the wireless equipment will not prevent break-downs at sea, nor will it prevent stranding or damage by heavy weather, but under such conditions the wireless installation can be made use of to call quick assistance, in cases of breakdown or other disablement. It is very reasonable to assume that in a certain percentage of such cases the assistance thus obtained results in preventing the loss of a vessel, or greatly reduces the cost of salvage from which the underwriters obtain a decided benefit.

An illustration of this fact is obtained in the case of the New York and Porto Rico Company's S. S. "San During a voyage from Porto Rico to New York some time ago, the vessel was disabled when 160 miles from New York by the breaking of the propeller shaft. In this location it would have been an easy matter to communicate the facts of the trouble direct to the company's office had there been wireless equipment aboard. The vessel had, a short time prior to this, discontinued the carrying of passengers, however, and her wireless apparatus had been transferred to a new vessel of the same line before the voyage during which the accident occurred. The result was that the vessel drifted helpless for ten days and when picked up was within a few miles of Bermuda. The cost in salvage was, therefore, increased a hundred-fold by not having wireless aboard.

Coming nearer home, and as a parallel case, we have the S. S. "Enterprise," which was disabled on March 25, 1912, by a broken propeller shaft when 300 miles from San Francisco en route to Honolulu. This vessel carried a wireless equipment, however, and by its use established immediate communication with the company at San Francisco. The results were quite the reverse of the "San Juan" incident, as the vessel was picked up within a few hours by the S. S. "Lurline," owned by the same company, and brought to port. It is a fact, however, and I am sure all shipping men will agree with me, that the

vessel would have been in grave danger had she not carried a wireless equipment. She began to drift southward immediately after the accident, at the rate of 8 or 10 knots per hour, which would very soon have taken her off the ordinary path of vessels. At least six days would have passed before any serious doubts as to her safety would have been entertained, and by that time the "Enterprise" would have been many hundreds of miles off her regular course and the cost of locating and salving would have been greatly increased. This, of course, would constitute a claim under the policy of insurance.

There is also the incident of the S. S. "Robert Dollar, which came in contact with the bar while passing out to sea at Astoria recently. The accident was not considered serious and the vessel continued on the voyage to China. When well out to sea, however, the ship was rendered helpless through the former accident. Wireless equipment had been placed aboard during her last stay in port and it was made use of to notify the owners of the conditions, and a tug was sent out to bring the vessel in, It is reasonable to say that without the use of wireless the cost of salvage would have been very greatly in-The vessel was on a route not frequently traversed and would have drifted with the current very rapidly. She had started on a long voyage and no alarm would have been felt for her safety for at least 30 days after the date of the accident.

The S. S. "Pleiades" was wrecked on Cape Lazaro. Magdalena Bay, August 16, 1912. Communication was immediately established between the ship and the steamship company's office, via Los Angeles. Complete details of the accident and the condition of the wreck was sent by wireless, with the result that on August 21st the wrecking steamer "Greenwood" was dispatched from San Francisco with all material necessary for rescuing the ship. It is particularly worthy of note that in this case the underwriters considered wireless of sufficient importance as an aid in the work of salvage to justify them in having it placed aboard the "Greenwood" at their expense before leaving San Francisco, and the results obtained proved that it was a very wise investment. The wireless was in constant daily use during the salvage work and while the "Pleiades" was being towed to San Francisco by the "Greenwood," all orders pertaining to the towing were transmitted between the two vessels by wireless.

There are numerous instances where coastwise vessels have been quickly picked up after having broken a propeller or rudder. Among these are the "Camino," "Maverick," "M. F. Plant," "Asuncion," "City of Topeka," "Chehalis," "Argyll," "Washtenaw," and many other vessels and barges.

From the few instances cited above it is positively shown that there IS a direct saving to the underwriters



through the use of wireless, and that wireless HAS proven itself worthy of material recognition and is a proven safeguard that results in greatly reducing the risk of total loss insurance and in reducing cost of salvage, hence expenses, in partial loss insurance writing. As the expense of this safeguard, from which the insurance companies benefit very materially, is now being paid for by the owner or operator of the vessel, it seems but fair that the underwriters should, in some effective way, be persuaded that they must bear a portion of the expense by giving a differential rate to vessels carrying wireless equipment.

A further benefit to the underwriters, which should be passed along to the steamship companies, should be obtained by formulating a schedule whereby the amount of salvage due a vessel would be reduced in cases where both ships carry wireless equipment, and one of them was called to the assistance of the other by that means of communication. It is unreasonable to credit a rescuing vessel with salvage based on the value of the ship rescued. Insurance underwriters cannot, or will not, adjust their views of the day, long since passed, when a disabled vessel drifted for days and perhaps was totally lost, owing to the inability to transmit the signal of distress over a distance beyond the range of vision.

Now that ships in distress can attract the attention of other vessels within a radius of 200 miles, vessels that would, had wireless not been invented, have continued their voyage in ignorance of the proximity to disaster, a schedule of salvage charges should be formulated on the basis of services rendered, without regard to the value of the vessel and cargo saved, and this saving, added to the tremendous advantages already in favor of the underwriters, should be reflected in preferential insurance premiums on vessels carrying wireless equipment.

A SHIPOWNER

INSURANCE TO COVER COSTS OF STRIKES.

In the September issue the Pacific Marine Review commented on a proposition recently launched in London that in case of a strike delaying the loading and prompt despatch of vessels the costs should be assessed against the ship and cargo, one-half to each, and same to be apportioned to the underwriters similar to an apportionment of a general average charge.

This proposition, as was forecasted, apparently has not met with much favor, as witness the following resolution passed by the London Chamber of Commerce after a careful consideration of the entire subject. It would seem that such a loss might be covered by special insurance contract at Lloyds but it can not be considered as within the province of a marine insurance policy. The resolution:

"That this meeting having considered a communication to the London Chamber of Commerce from the Institute of London Underwriters, dated July 22, 1913, and also the terms of the proposed strike clause for use in bills of lading therein referred to, is of opinion that it is unreasonable that one-half of the additional expenditure incurred by shipowners by reason of a strike should be thrown upon shippers or consignees of cargoes, and that such an innovation is inequitable, in so far as it will penalize shippers and consignees in respect of contingencies which are beyond their control.

"Further, this meeting is of opinion that the expenditure being outside the liabilities of the usual policy of marine insurance and irrecoverable under such contracts, should be met by the shipowners as being incidental to

the usual business of shipowning, and, as far as shippers and consignees are concerned, have been and should continue to be covered by the freight paid.

"That a copy of this resolution be sent to the Insitute of London Underwriters, the Shipping Federation. the Chamber of Shipping of the United Kingdom, and the Board of Trade.'

LOADING AND UNLOADING VESSELS.

"Any person engaged in the business of loading and unloading vessels, or who contracts to load or unload the same, or who is in charge of a vesesl while loading or unloading, or who is authorized to load or unload a vessel having a carrying capacity of fifty tons or more, shall employ and supply upon every vessel while loading or unloading a person over twenty-one years of age to act as signal man or hatch tender, whose sole duty it shall be to observe the operation of loading and unloading of each working hatch and to warn persons employed there of the possibility of injury to property or danger to person. Violation of the law is a misdemeanor.'

This law was passed at the regular California legislative session of 1913 and became effective August 10, 1913.

WAR RISK INSURANCE.

That the situation between the United States and Mexico is receiving consideration by our friends across the pond is evidenced by the following from a recent issue of "Fairplay." As the thirty days mentioned are now up the underwriters who took the gambling chance will write off a profit:

"In view of the acute tension existing between the governments of the United States and Mexico, 10 guineas per cent. was recently paid for thirty days' cover, to pay a total loss in the event of an outbreak of hostilities within that period."

Under date of August 6, 1913, the Commissioner of Navigation announced a decision to the effect that American vessels, having on board merchandise destined to foreign ports and intending to proceed to domestic ports to finish loading outward cargo, will be obliged to sail under registry from the initial port where merchandise intended for a foreign port was laden.

WRECKS AND CASUALTIES.

"AMERICANA," Schr. From Astoria, March 3rd, with lumber for Sydney, N. S. W., has been posted at Lloyds as missing. She was a steel four-masted schooner built in 1902.

'KAYAK," Cannery Steamer. From Seldovia for Seattle has become a total wreck at Ocean Cape. Steamer valued at about \$25,000, partially insured.

"MARION CHILCOTT," Str. From Honolulu September 17th for Gaviota was compelled to return to port with steering gear disabled.

"WM. CHATHAM," Str. Bound in to Seattle was ashore on Whidby Island on September 17th. She was floated without assistance apparently undamaged.

VINDICATED.

"I always knew Josh would grow up to be a great help to us," said the fond mother.

"I haven't seen him do any regular work yet," replied Farmer Corntossel.

"Well, if you'll take notice, he's the only person around the place who knows how to teach the summer boarders to do the tango and the turkey-trot."-Washington Star.



"PUT YOUR HOUSE IN ORDER."

When your doctor tells you to "put your house in order," you realize you are facing a serious situation—and that is just the situation that all employers of labor will face in less than four months, when the California Workmen's Compensation Act goes into effect, on January 1, 1914. Briefly, the effect of the new Act is as follows:

Employer is liable for practically every injury to his employees, except only where employee is intoxicated or wilfully injures himself.

Where accident has been caused by employer's gross negligence, the award of damages may be made by a jury, without any limits as to amount, or in accordance with conditions of the new Act—at option of injured employee.

Employers cannot protect themselves by insurance when accident is caused by their gross negligence, but must pay the award—whatever it is—themselves.

Any claim for compensation is a preferred claim, and would come before ordinary creditors in bankruptcy, thus seriously affecting all credit ratings, unless proper insurance is carried.

Employers required to provide a safe place of employment, which means that proper safety appliances must be installed and defects in buildings corrected.

The payments under the Act are liberal, in some cases amounting to a life pension, and in every case 90 days' medical attention must be furnished, if required.

The first effect of this Act will be the absolute necessity of every employer having his plant thoroughly inspected by an expert, and his recommendations carried out. This should be done prior to January 1, 1914, to avoid the possibility of a claim through negligence of the employer, since such a claim, as previously stated, cannot be insured against.

The second effect will be that practically every employer will be obliged to protect himself against ordinary accidents by insurance—both to protect his credit standing and to avoid the necessity of using portion of his working capital to provide a fund to meet claims, in addition to the expense of handling the details and securing expert service for inspectors and medical attention.

No one knows what rates will be required to enable the insurance companies to pay their losses, expenses and protect the interests of their stockholders—but good business judgment would seem to require them to charge too high, rather than too low a rate.

It was this condition of uncertainty that caused Mather & Co. to form the Liability Inter-Insurance Exchange, as they felt that after forty years' experience as insurance agents and brokers, that the inter-insurance plan of protection was best suited to meet the new liability situation.

With an Inter-Insurance Exchange they are in a position to furnish reliable insurance and inspection service at actual cost, since the premium originally paid is merely a deposit, from which losses and expenses being deducted, the balance is returned in annual dividends to each member.

The expenses are fixed by contract, insuring low cost of operation to the members, and in addition, a committee elected by the members controls all funds and the management.

No employer is accepted as a member unless he has a sound financial rating, and is also willing to keep his property in safe condition.

This Exchange is already inspecting properties of their members, so that on January 1, 1914, all conditions which would tend to cause accidents—particularly those in which gross negligence could be claimed—may be corrected as far as possible.

SALVAGE BY FISHERMEN.

"THE COMET."

(District Court, W. D. Washington, N. D. June 11, 1913.) Salvage—Persons Entitled to Compensation—Members of Fishing Crew.

Libelants were fishermen, employed on a gasoline fishing schooner; their pay depending upon the weight of fish caught by them and sold to the owner. The schooner became disabled forty miles from land, and libelants volunteered to take the ship's dory and compass and go to shore for assistance, which they did, leaving the master and others on board. The service was not extrahazardous, nor was the schooner abandoned. Held, that they bore such relation to the vessel that they were not in the position of salvors, and were not entitled to salvage compensation.

In Admiralty. Suit by M. Nilson and others against the gasoline schooner "Comet"; San Juan Fishing & Packing Company, claimant. On exceptions to libel. Exceptions sustained.

Charles A. Enslow, of Seattle, for libelants. McClure & McClure, of Seattle, for claimant.

CUSHMAN, District Judge. This cause is for decision upon claimant's exception to the libel, which prays for a salvage award on account of alleged "extrahazardous services performed by libelants outside the scope of their employment." Libelants were fishermen aboard the schooner "Comet." It is alleged that:

"The pay of such fishermen was dependent entirely upon the number and weight of the fish caught by them and sold to the owner of the vessel."

On July 2, forty miles off Cape Flattery, on account of the breaking of her machinery, the schooner became helpless and uncontrollable, and the captain called for volunteers to go to shore for assistance. Libelants volunteered, and left in the ship's dory, with the ship's only compass, rowing first thirty or forty miles to Tatoosh Island, thence about four miles further to Neah Bay, where they informed the United States Government's vessel "Snohomish" of the facts, and libelant Hanson accompanied the Snohomish back and assisted in towing the "Comet" safely to port at Neah Bay. It is alleged that libelants' efforts alone saved the "Comet" from entire destruction.

A number of grounds for exception are assigned but it will only be necessary to consider the one contention; that is, that libelants are entitled to nothing upon the facts alleged.

This exception must be sustained. It makes no difference whether libelants be considered, technically, members of the crew or not, they, with the owner of the vessel and the rest of its complement of men, were engaged in a common enterprise, the success of which depended upon the safety and good order of the schooner. When libelants helped the ship they helped themselves.

The major reason for the rule denying a crew salvage, except after abandonment of the ship, or after discharge of the crew, is to insure fidelity, as well as effort, on their part. Libelants could bring about the disability of the schooner with almost the same facility as members of the crew solely engaged in its navigation.

The schooner had in no sense been abandoned. The master and others of the crew remained aboard. The mere fact that the master called for volunteers to secure assistance and libelants answered the call would not effect their discharge, entitling them to salvage.

There is no showing that the service was of an extrahazardous nature, as in Hobart vs. Drogan, 10 Pet. 108, 9 L. Ed. 363. It also appeared in that case that the libelant, a pilot, had completed his services as pilot, left the vessel, and gone about his business. A few



hours afterwards the vessel went on the breakers in a storm and was abandoned before the salvage service was rendered.

The question in the present case has been decided by this court in the case of The Zapora, 205 Fed. 1004, decided January 15, 1912, by Judge Donworth, in which decision it was held:

"Under the authorities, I see no escape from the conclusion that the libelants bore such a relation to the ship, at the time of the occurrences described in the amended libel, that they were not in the position of salvors and are not entitled to salvage compensation. It is therefore ordered that claimant's exceptions to the amended libel be and they are hereby sustained."

Libelants seek to distinguish the decision in this case, because the "Zapora" was aground on a reef. It is concluded that that fact would not change the rule, as it does not bear upon the relation of libelants to the vessel.

Having reached this conclusion, it is not necessary to consider the effect of libelants' using the dory of the schooner and its only compass in going for assistance.

Although not deciding the question, it may be inferred from the language used by the Supreme Court in its opinion in Sinclair vs. Cooper, 108 U. S. 352, 358, 2 Sup. Ct. 754, 757 (27 L. Ed. 751), that this fact would, of itself, defeat libelants' right to salvage, for therein it is said:

"Yet a passenger is not, as the officers and crew are, bound to stand by the ship to the last; he may leave her at any time and seek his own safety; and for extraordinary services, and the use of extraordinary means, not furnished by the equipment of the ship herself, by which she is saved from imminent danger, he may have salvage."

[Editor's Note.—One fact not brought out in the trial of the above case is that when the fishermen were called upon to volunteer for the service they were promised the sum of \$10 each. On arrival at Seattle, however, it appears that probably through ill advice they concluded that they could recover more by proceeding against the schooner for her salvage. The case being decided against them they will not only receive the \$10 promised but will probably be obliged to pay a portion at least of the costs of the suit.]

JONAH AND THE WHALE

(Continued.)

We have pleasure in presenting below a communication in corroboration of the statements of "An Ancient Mariner" re "Jonah and the Whale," which appeared in our September issue:

Dear Captain:

I read with much interest your contribution to the knowledge of the Jonah-Whale incident, and as I have some personal information bearing on the subject, that to a great extent supports your statements, I thought I would write you anent the matter.

I was at that time United States Consul at Joppa. As old Squire Amittai and my father were great friends (having lived long as neighbors in the town of Gath, where I was born), it was quite natural that his son Jonah, when he came to run away from home to go to sea, should, in view of my official position, apply to me

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for assistance. As I was unable to induce him to abandon his undertaking and return home, I did my best to properly outfit him for the voyage. Among other things, I purchased the identical knife you so accurately describe, had it suitably marked by the best engraver in Joppa, and presented it to him two days before he sailed on his memorable voyage. It was a "Barlow," at that time rare, and much prized, and the engraving of the American eagle was considered quite a work of art.

Furthermore: In searching my back files, I find a letter from Jonah himself. It is before me at the present writing, paper discolored, ink faded, yet still legible, in which he gives a full account of his adventures. It is most astonishing how history repeats itself. The date of the letter I am unable to determine, there being a difference of 142 years between the date written by Jonah and the date stamped by the Nineveh postmaster upon the envelope. Which may be right I cannot say; on the one hand, we know that Jonah was careless in such matters; on the other hand, there being no civil service examinations in those days, the postal service from Nineveh was notoriously bad.

In this letter young Amittai describes his sailing from the lower harbor of Joppa on the "Lively Sally" of the Blue Star Line, having taken second cabin berth to Tarshish (passage prepaid), passed outer light at 3:15 p. m., wind NE by Nothe, barometer 29.6, but falling fast, every sign of storm. Being unused to the sea, the motion of the vessel soon made him so uncomfortable that he was forced to go below. Here his discomfort increased to such an extent that he at one time feared he should die; later, as the storm increased in violence he feared he should not, and called upon the stewards to throw him overboard. This at first they refused to do, but later, his nausea increasing, his importunities became so urgent that they, bearing in mind that his passage had been paid in full, consented, and taking him on deck, they soused him overboard, more dead than alive.

The whale must have received him as he came overboard and immediately sounded, and as all wave motion ceased as he left the surface, Jonah soon recovered his normal strength and spirits. He had not, however, my dear Captain, your wonderful resourcefulness, in that it took him three days to arrive at the identical method of escape that your superior intellect was able to excogitate in a few short hours. He mentions incidentally the tattooing of the coetaceous gland and expressed profound regret that he neglected to take his knife with him when he disembarked. I would mention here, parenthetically, that in my official capacity, at Mr. Amittai's request, I

entered suit against the Blue Star Line for such portion of the passage money as would cover the voyage from Whaleport to Tarshish. The company, while admitting in general the equity of the claim, contended that as the plaintiff had been jettisoned in great stress of weather, and in time of great peril for ship and cargo, and as the said ship did arrive safely with the remainder of said cargo at its port of destination, and that the aforesaid safe arrival of cargo and ship was due to said jettison, that the affair was a matter for general average, and they prayed that the court would so rule. Moreover, the defendants argued that the port of Whaleport was unknown to them, that it was not a port of call for the vessels of their line, although it would appear from the evidence of the plantiff that it was a port of entry, and that the location of said port did not appear on any of the charts of the company, and that, until its geographical position be definitely established, it would be impossible to determine the amount of rebate to which the plaintiff was justly entitled. They therefore prayed that the court require of the plaintiff a bill of particulars, specifying the exact location of the aforesaid port. This the court thought reasonable, and so ordered. Had we at the time known of your experience, my dear Captain, we might have called on you for evidence, but as we had only the unsupported evidence of Mr. Amittai, who at the time of his landing was not in condition to make the proper deposition, we could not then establish our point; and I suppose by this time the claim is outlawed.

. We revert now to the letter of our friend, Jonah, to where he goes on to state that after effecting a landing by the method employed by you, he went on to the city of Nineveh, which he entered as an itinerant preacher, and for forty days conducted a series of "revival meetings" with such marked success that from the amounts received he was enabled to purchase from the Government a quarter-section of most fertile land, which he converted into a melon ranch, planting an improved variety of the Rocky Ford cantaloupe. These at the time of writing had made a wonderful growth that, anticipating an overstocked market, he had that day closed a contract with the "Nineveh Ebeneezer" Cold Storage Warehouse, so as to hold over about 500 tons for a favorable market.

Here the letter ends, except for some few private matters of no interest to the general public. I have received, since, no direct communication from him; but I heard indirectly, subsequently, that paying no attention to the Professors of the National Agricultural College, he absolutely refused to properly spray his vines at the proper

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Generated on 20 Public Domain, time to protect them from the ravages of the Borabugar worm that for several years had done much damage to crops in the Province. As a result, when the worms came, almost his entire crop was destroyed in thirty-six hours. The few melons that escaped and came to maturity were of wonderful beauty in size, form and color, but some thought that they could detect in them a faint but persistent flavor of whale-oil.

Poor Jonah! His was a rare mind—full of bright hopes and fond anticipations, ever gazing into the rosy clouds of the future, and at the same time kicking like an army mule at everything present and past. As it is some years since I have heard from him directly or indirectly, I think he must be dead.

Receive, dear Captain, the assurance of my profound consideration, and believe me,

Your most humble servant,

G. O. LIAR, B. D. O., F. O. B., &c., &c., Corresponding and Life Member of Ananias Society, Some Time Past Master.

-Maritime Exchange Bulletin.

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THE YARN OF THE "NANCY BELL"

'Twas on the shores that round our coast From Deal to Ramsgate span, That I found alone on a piece of stone An elderly naval man.

His hair was weedy, his beard was long,
And weedy and long was he,
And I heard this wight on the shore recite,
In a singular minor key:

"Oh, I am a cook and a captain bold, And the mate of the 'Nancy' brig. And a bo'sun tight, and a midshipmite, And the crew of the captain's gig."

And he shook his fists and he tore his hair,

Till I really felt afraid,

For I couldn't help thinking the man had been drinking,

And so I simply said:

"Oh, elderly man, it's little I know Of the duties of men of the sca, And I'll eat my hand if I understand However you can be

"At once a cook, and a captain bold, And the mate of the 'Nancy' brig, And a bo'sun tight, and a midshipmite, And the crew of the captain's gig." Then he gave a hitch to his trousers, which
Is a trick all seamen learn,
And having got rid of a thumping quid,
He spun this painful yarn:

"'Twas in the good ship 'Nancy Bell'
That we sailed to the Indian Sea,
And there on a reef we came to grief,
Which has often occurred to me.

"And pretty nigh all the crew was drowned (There was seventy-seven o' soul), And only ten of the 'Nancy's' men Said 'Here!' to the muster-roll.

"There was me and the cook and the captain bold, And the mate of the 'Nancy' brig, And the bo'sun tight, and a midshipmite, And the crew of the captain's gig.

"For a month we'd neither wittles nor drink, Till a hungry we did feel, So we drawed a lot, and, accordin' shot The captain for our meal.

"The next lot fell to the 'Nancy's' mate, And a delicate dish he made: Then our appetite with the midshipmite We seven survivors stayed.



"And then we murdered the bo'sun tight, And he much resembled pig; Then we wittled free, did the cook and me, On the crew of the captain's gig.

"Then only the cook and me was left, And the delicate question, 'Which Of us two goes to the kettle?' arose And we argued it out as sich.

"For I loved that cook as a brother, I did, And the cook he worshiped me; But we'd both be blowed if we'd either be stowed In the other chap's hold, you see.

"'I'll be eat if you dines off me,' says Tom; 'Yes, that,' says I, 'you'll be— 'I'm boiled if I die, my friend,' quoth I; And 'Exactly so,' quoth he.

"Says he; 'Dear James, to murder me Were a foolish thing to do, For don't you see that you can't cook me, While I can-and will-cook you!'

"So he boils the water, and takes the salt And the pepper in portions true

(Which he never forgot), and some chopped shalot, And some sage and parsley too.

"'Come here,' says he, with a proper pride Which his smiling features tell, 'Twill soothing be if I let you see How extremely nice you'll smell.

"And he stirred it round and round and round, And he sniffed at the foaming froth; When I ups with his heels, and smothers his squeals In the scum of the boiling broth.

"And I eat that cook in a week or less, And-as I eating be The last of his chops, why, I almost drops, For a vessel in sight I see!

"And I never larf, and I never smile, And I never lark nor play, But sit and croak, and a single joke I have—which is to say;

"'Oh, I am a cook and a captain bold, And the mate of the 'Nancy' brig, And a bo'sun tight, and a midshipmite, And the crew of the captain's gig!"

-"Bab" Ballads.

AN AMERICAN MERCHANT MARINE AGAIN A POSSIBILITY

All true Americans reading the speech made by the Honorable Wesley L. Jones in the United States Senate on September 8, 1913, cannot help but admire the earnestness of purpose that inspired such statements and those of us who make any pretense of being patriotic citizens will feel the facts set forth in the following and want to do something to help the upbuilding of our merchant marine in the foreign trade.

A ten per cent. tax on goods brought to this country in foreign bottoms is something worth while. House recently passed the 5 per cent. preferential duty clause of the tariff bill, only to have it rejected by the Senate and every credit is due Senator Jones for his fight in not only reinstating the clause ignored by the Senate but in making it one worth while.

What a help this would prove if he only wins out!

We're going to do what we can to assist and we suggest that all shipowners, shipbuilders and others interested send their ideas concerning this subject for publication in the Pacific Marine Review, as it would be most gratifying to send copies of such articles to those at Washington, D. C., who should be concerned in such important matters.

Half of Senator Jones' speech appears this month, to be continued with the other installment next month. In our opinion, it is "great" and should be read by every patriotic American citizen.

The Tariff.

[Speech of Hon. Wesley L. Jones, of Washington, in the Senate of the United States, September 8, 1913.] The Senate had under consideration the bill (H. R. 3321) to reduce tariff duties and to provide revenues for

MR. JONES. Mr. President, the provision stricken out is one of the most important in this bill. It provides in brief that a discount of 5 per cent, on all duties im-

the Government, and for other purposes.

posed by this act shall be allowed on goods, wares, and merchandise imported in American ships. The purpose of it evidently is to do something to build up the merchant marine of this country, which is now in such a deplorable condition.

The purpose of my amendment is to impose a duty of 10 per cent. additional upon such goods imported in foreign vessels; that is, in vessels not built in this country or not registered prior to the passage of this act. It will be noted that the provision in the bill does not relate to vessels built in this country at all, but to vessels registered; so that it would apply not only to vessels registered; so that it would apply not only to vessels registered before the passage of the act, but to any vessel registered afformation which the country of registered afterwards, whether built in this country or

not.

The House provision is an attempt—a slight one. I grant you, but an honest attempt—to remedy a situation which all patriotic citizens must deplore. It is to be regretted that the Senate committee has stricken out this provision and offered nothing in its place. It is incomprehensible to me that such action should have been taken by them, and I earnestly hope that they will not adhere to such action. This is not a party proposition and should not be made such. I am glad to support action along the lines of the House provision and will vote for that if we can not get something better.

Our foreign trade has been increasing with wonderful strides notwithstanding the trade has been which our strides notwithstanding the tariff barrier which our Democratic friends claim we have been maintaining; and while I do not include the facts while I do not intend to argue this question, the facts conclusively show such a claim to be absolutely unfounded.

founded.

Under the Dingley Act our imports in 1898 amounted to \$616,049,654 and our exports to \$1,231,482,330. In 1909 our imports had increased to \$1,311,920,224 and our exports had increased to \$1,663,011,104. Our total trade in 1898 was \$1,847.531,984, while in 1909 our total trade amounted to \$2,974,931,328, or an increase in eleven years in our total foreign trade of \$1,127,399,344.

Under the Payne-Aldrich Act in 1913 our import trade amounted to \$1,812,978,234, while our export amounted to \$2,465,884,149. Our total trade in 1913 amounted to \$4,278,862,383, or an increase in four years under the Payne Aldrich bill of \$1,303,831,055.

We have a right to be proud of the tremendous growth

We have a right to be proud of the tremendous growth



of our foreign trade. No nation in the world's history can equal it, but when we see how it is carried we are filled with shame. Practically all of this great trade is by sea, over highways which are free to all. We have granted great land subsidies to encourage lines of land transportation, not alone to build up the country, but to enable products to get to market, realizing that returns will be slight if our people must depend upon the markets in the immediate vicinity of production. We seem to be satisfied, however, with getting our products to the seashore and are apparently willing to depend upon foreign ships, foreign peoples, and foreign flags to take our products to the world's markets.

seashore and are apparently willing to depend upon foreign ships, foreign peoples, and foreign flags to take our products to the world's markets.

The farmer who depends upon his neighbor to get his crops to market would be considered foolish and no one would be surprised if his grain was not hauled at the proper time or put on the market in bad shape. The nations of the world must indeed laugh in their sleeves at the sorry spectacle presented by Uncle Sam in the transportation of his foreign commerce.

In 1885 our ships carried \$194,865,743 of our foreign trade, while foreign ships carried \$1,274,384,309 or six times as much. In 1913 our ships carried \$378,234,924, while foreign ships carried in our own ships. The percentage of such goods carried in our ships was 8.7. Since 1885—and I call special attention to this—foreign ships have carried over \$50,000,000,000 of our foreign commerce. Estimating the freight at 15 per cent., we have paid them over \$7,500,000,000 of or getting our products to their markets and supplying our own. Of what benefit is a balance of trade in our favor if we pay out most of it for freight? We should have done at least 50 per cent. of our foreign business, and this would have added two or three billions of dollars to our balance of trade and increased wonderfully our prosperity. Hired freight is just as expensive as so much of any other product and freight saved by our people is freight earned.

Not only is this condition of things humiliating and unprofitable but it is actually dangerous. British ships transport the great part of our foreign commerce. Suppose England should engage in a war with a great power. Thousands of her ships would be taken for transports and other thousands might be destroyed. Our foreign commerce would be destroyed, and the products we now send abroad would be left on our hands, glutting our markets and bringing upon us industrial ruin and wide-spread commercial disaster. Farmers and manufacturers would suffer alike and the laborer and his family would

spread commercial disaster. Farmers and manufacturers would suffer alike, and the laborer and his family would face the wolf of hunger in his home. We are at the very point where Thomas Jefferson, whom I have heard referred to to-night as the patron saint of the Democratic Party and the idol of my friend from Mississippi, said protective and defensive measures become necessary. He

"If particular nations grasp at undue shares of our commerce, and, more especially, if they seize on the means of the United States to convert them into aliment for their own strength, and withdraw them entirely from the support of those to whom they belong, defensive and protective measures become necessary on the part of the nation whose marine resources are thus invaded; or it will be disarmed of its defense, its productions will be at the mercy of the nation which has possessed itself exclusively of the means of carrying them, and its politics may be influenced by those who command its commerce."

Our productions are now almost at the mercy of foreign nations; in a large degree they have influenced our politics. Their influence affects this very bill. Such a condition should no longer be tolerated; at least we should make some attempt to remedy it if we would merit our own self-respect.

We are building the Panama Canal at a cost of nearly \$500,000,000, and I have been reliably informed that much \$500,000,000, and I have been reliably informed that much of the material used in its construction has been carried there under a foreign flag, and when it is completed the American flag passing through it in the foreign commerce will be a curiosity. A few years ago a great fleet of American battleships sailed from the Atlantic to the Pacific and around the world, but they were accompanied by foreign ships flying foreign flags, carrying the coal necessary to furnish the motive power to take them on their journey. To-day the coal for one naval station on the Pacific is carried in foreign ships. What a spectacle for the nations of the earth. If this one humiliating fact could ring in the ears of every true, patriotic American he would insist that some steps be taken at once by his representatives to prevent its recurrence.

If foreign ships must convoy our fleets in time of peace, what would we do in war, with the ships of neutral nations forbidden to assist us by the law of nations? Our battleships would be helpless; we would be "disarmed of our defense"; we are disarmed of it now.

Has this always been our position? It was so at the close of the Revolutionary War, when only 17 per cent. of our import trade and 30 per cent. of our export trade was in the hands of our own shippers and under our

was in the hands of our own shippers and under our flag. Did the fathers of the Republic accept this condition supinely? Not at all. They knew that the flag in a foreign port on a merchant ship is the ocean's coma foreign port on a merchant ship is the ocean's commercial traveler and increases and develops its country's trade. They knew that the lack of a merchant marine was a great source of weakness, humiliating in time of peace, dangerous in time of war, and a constant menace to commercial stability. They were patriots and men of action and took immediate steps to increase our tennace in the foreign trade.

The first act passed by the American Congress was the act of July 4, 1789, and section 5 allowed a discount of 10 per cent. of the duties provided therein on goods, wares, and merchandise when imported in Americanbuilt vessels.

This is exactly in line with the provision inserted in the bill by the House, except that at that time the discount allowed was 10 per cent. instead of 5, as provided in the bill, and only to vessels built in the United States. Sixteen days afterwards another act was passed imposing discriminating tonnage taxes 6 cents per ton on imposing discriminating tonnage taxes, 6 cents per ton on American vessels, 30 cents on American-built vessels owned by foreigners, and 50 cents per ton on foreign-built-and-owned vessels. Another act was passed prohibiting any but American vessels from carrying the

hibiting any but American vessels from Carrying and American flag.

In 1790 a new law was passed providing for an additional duty of 10 per cent. on goods brought into the country in foreign ships.

This is substantially the provision of the amendment which I have proposed. Our fathers found that the act of 1789 was not bringing the most satisfactory return, and consequently they changed it, and instead of allowing a discount of 10 per cent. on goods imported in American ships they added 10 per cent. on goods brought in in foreign ships. This provision proved wise, and was renewed from time to time with the approval and at the instance of the founders of the Democratic party. In 1804 an act of this kind was signed by Thomas Jefferson, the political idol of the Senator from Mississippi. Another was approved by James Madison.

from Mississippi. Another was approved by James Madison.

This is the policy which I should like to see adopted by the Senate. I think it is a policy that can well be adopted by our Democratic friends. They can well afford to return to the policy of the founders of their party, from which the results were so immediate and so gratifying and which abundantly proved the wisdom of the measures taken. In 1795 our ships carried 92 per cent. of our imports and 88 per cent. of our exports. The law of 1790, increasing the duties on all goods, wares, and merchandise imported in foreign ships by 10 per cent, was re-enacted from time to time, a law of this kind being passed in 1804 and signed by Thomas Jefferson. Notwithstanding the embargo acts, orders in council, and the harassing of our shipping by England and France, our flag carried 93 per cent. of our imports in 1810 and 90 per cent of our exports. In 1815, after the War of 1812, our ships carried 77 per cent. of the imports and 71 per cent. of our exports, and in 1826 95 per cent. of our imports and 89.6 per cent. of our exports were carried in our ships, and our flag waved over every sea and greeted the morning sun in every commercial harbor of the world. In 1830 we dropped to 93.6 per cent. of the imports and 80.3 per cent. of the exports; in 1835, to 90.2 per cent. of the imports and 77.3 per cent. of the imports and 65.5 per cent. of the imports and 75.3 per cent. of the imports and 65.5 per cent. of the exports; in 1860, to 63 per cent. of the imports and 69.7 per cent. of the exports; in 1860, to 63 per cent. of the imports and 69.7 per cent. of the exports; in 1860, to 63 per cent. of the imports and 69.7 per cent. of the exports; in 1860, to 63 per cent. of the imports and 69.7 per cent. of the exports; in 1860, to 63 per cent. of the imports and 69.7 per cent. of the exports; in 1860, to 63 per cent. of the imports and 69.7 per cent. of the exports; in 1860, to 63 per cent. of the imports and 69.7 per cent. in the export trade.

I submit a table giving the the export trade.

I submit a table giving the percentages for the first

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and last year of each five-year period; and while some years the per centum was a little higher than others, there was a general decline, as shown above, and it clearly appears that the decline in our shipping began long before the Civil War. In 1865 our ships carried 27.7 per cent. of our total foreign trade and in 1870 35.6 per cent., from which time there was a gradual decline, until now we do but a very little over 8 per cent.

cent.	1 Y	Exports.
Year.	Imports.	30.0
1789	17.5	
1795	92.0	88.0
1/95		*58.0
	*74.5	
1796	94.0	90.0 87.0
1800		
1801		87.0
1805	93.0	89.0
1806	93.0	89.0
1810	93.0	90.0
1811	90.0	86.0
1815	77.0	71.0
1816	73.0	68.0
1820	90.0	89.0
1821	92.7	84.9
1825	95.2	89.2
1826	95.0	89.6
1830	93.6	86.3
1831	91.0	80.6
1835	90.2	77.3
1836	90.3	75.4 79.9
1840	86.6	79.9
1841	88.4	, , , , ,
1845	87.3	75.8 76.2
1846	87.1	1
1850	77.8	1
1851	75.6	
1855	77.3	
1856	78.1	70.9 69.7
1860	63.0	09.7
* Gain.		

Why is it that our merchant marine is no more? Why was it that from 1826 down to the beginning of the Civil War our share of our carrying trade grew steadily less?

The answer is plain to me. The legislation of the fathers had been so successful in promoting our shipping trade and industry that our people came to the conclusion that we could command the seas against any competitor, and so in 1815 a treaty was entered into with England reciprocally removing the discriminating duties on goods brought into each country in the chief duties on goods brought into each country in the ships duties on goods brought into each country in the ships of the other and similar treaties were made with other countries. These treaties were usually made for a definite time and afterwards renewed to continue in force until abrogated by either party after a year's notice, the right of abrogation being expressly reserved to each party. Our shipping had received such an impetus from the encouragement given by the legislation of the fathers that it more than held its own, and in 1828 Congress passed an act which reads as follows:

The Act That Has Destroyed Our Shipping Power.

"That upon satisfactory evidence being given to the President of the United States, by the Government of any foreign nation, that no discriminating duties of tonnage or impost are imposed or levied in the ports of said nation upon vessels wholly belonging to citizens of the United States, or upon the produce, manufactures, or merchandise imported in the same from the United States, or from any foreign country, the President is hereby authorized to issue his proclamation declaring that these foreign discriminating duties of tonnage and impost within the United States are, and shall be suspended and discontinued so for as respects the vessels. pended and discontinued so far as respects the vessels of the said foreign nation, and the produce, manufactures, and merchandise imported into the United States in the same from the said foreign nation, or from any other country; the said suspension to take effect from the time of such notification being given to the President of the United States, and to continue so long as the reciprocal exemption of vessels belonging to citizens of the United States and their cargoes, as aforesaid, shall be continued, and no longer.

It will be noted that this simply provides for a

suspension of this policy and our right to recur to it is fully recognized.

This act not only permitted the ships of a nation to bring in the products of that nation, but also the products of all other nations free from discriminating duties. This act was intended to establish reciprocal equality between this nation and all other nations. We complied with its letter and spirit, but other nations did not, and, as Representative Underwood, the present leader of the Democratic majority in the House of Representatives—I hope my Democratic friends will note this tives—I hope my Democratic friends will note this—said in 1910:

"The passage of the bill proved the undoing of the merchant marine and the policy it inaugurated has never been changed."

If other nations who accepted the terms of this legislation had observed the spirit of it we would no doubt have been able to maintain our position of superiority, but they did not.

"Shipping nations," said Mr. Uunderwood, "were not honest enough between themselves for the application of nonest enough between themselves for the application of free-trade principles in navigation and most of our rivals, while professing to practice a policy of nondiscrimination against American ships, acted unfairly and resorted to some form of ship protection, either by granting subsidies or bounties or by adopting other methods of discrimination against American ships."

This is not a statement from me; it is not a statement from any Republican. It is a statement from the Democratic leader of the House of Representatives and the real author of the pending bill.

Some may contend that it was the use of iron and the Civil War that caused the loss of our merchant marine. They overlook the decline of 32 per cent. in the import trade and 19 per cent. in the export trade during the period from 1828 to 1860, or prior to the war. The seeds of destruction were sown before the war and before iron ships, and the results began to appear years before. You may say what you will, but the facts are that under the policy of the fathers our shipping trade increased until the act of 1828 was passed, and from that time on that trade gradually and continuously decreased. It may be foolish in me to trace these results to the act of 1828 and the subsidies and discriminations practiced by Great Britain, but no candid mind can escape from such a conclusion. Some may contend that it was the use of iron and the such a conclusion.

Great Britain was our greatest rival in the ship-carrying trade. She looked with a lealous eye upon our great fleets of fast merchantmen. It was humiliating to the "Proud Mistress of the Seas" to have her su-premacy threatened by her former colonies. The people, statesmen, and rulers of Great Britain had early seen the importance of a merchant fleet and for centuries they had fostered and protected this industry, and it may not had fostered and protected this industry, and it may not be amiss to notice briefly the means she had taken to become the "Mistress of the Seas." It ought to be instructive to us in the present condition of our shipping. structive to us in the present condition of our shipping.
In 1381 an act was passed providing:

"That for increasing the shipping of England, of late much diminished, none of the King's subjects shall hereafter ship any kind of merchandise, either outward or homeward, but only in ships of the King's subjects, on forfeiture of ships and merchandise, in which ships also the greater part of the crew shall be of the King's subjects."

This act was not of the permanent benefit that it was hoped it would be and British shipping languished until 1651. The Dutch were masters of the sea. Their ships carried the world's products from port to port and they arrogantly carried at their mastheads brooms significant of their supremacy. Cromwell became Protector of England and the action he took and the results are graphically told in the following language by a great student of navigation problems: great student of navigation problems:

"When Oliver Cromwell, a trifle more than two and a half centuries ago, had composed the differences that had previously existed in England and had brought about an orderly condition in the named an orderly condition in that turbulent country, he paused for a moment to gaze seaward, and instantly he realized that he had but half completed the work high destiny had imposed upon him. Descine down what were then that he had but half completed the work high destiny had imposed upon him. Passing down what were then called 'The Narrow Seas,' now commonly called the English Channel, were numerous Dutch ships that, too English of Cromwell's gorge, flaunted at their mastarrogantly for Cromwell's gorge, flaunted at their mastarrogantly for the world the fact that they



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'swept the seas,' because at that time the maritime dominance of the Dutch was unquestioned.

"Cromwell, happily for England, was a man of action. "Cromwell, happily for England, was a man of action. He was also a man of indomitable determination. He set about the task of removing the brooms from the mastheads of Dutch ships. It was some task, but Cromwell accomplished it, and he did it so thoroughly that since that time Dutch participation in maritime affairs has been of a minor character. The laws of England, under the guidance of the doughty Protector, were made to decree that any ship entering. English ports made to decree that any ship entering English ports from any part of the world other than the continent of Europe, if not English, commanded by an Englishman, and with three-fourths of the crew subjects of England, should be subject to forfeiture; and ships other land, should be subject to forfeiture; and ships other than English, as described, entering England from ports of the continent of Europe should pay double aliens; duties upon whatever merchandise they brought; that no foreign fishing vessels would thereafter be permitted to enter English ports for trade under penalty of forfeiture. The blow was aimed straight at the Dutch and they resented it and went to war, and England whaled the everlasting tar out of them. Then the brooms disappeared from the mastheads of Dutch ships. Dutch maritime supremacy was thereafter referred to in the past tense, and ever since then England has been 'the mistress of the seas.' It took just fifty years for Raleigh's axiom that seas.' It took just fifty years for Raleigh's axiom that whoseever commands the sea commands the trade of the world, and therefore the world itself, to find concrete expression in England's laws, but when it did find such expression England took upon herself all of the

dignities and emoluments of world dominance.

"Doubtless in those old days there were timid souls who attempted to discourage Cromwell from undertaking such a transformation. Doubtless there were those who told him how well Dutch ships served English needs, and told him how well Dutch ships served English needs, and especially how cheaply Dutch ships did English carrying, and that England could not get along without the fish that Dutch fishermen daily brought to their ports. Perhaps there were those who advised Cromwell not to do anything drastic and who pointed out to him that the free-trade methods by which the Dutch had succeeded were the methods England should adopt if it ever expected to succeed upon the sea, that the boundless sea was the common arena of all peoples and all nations upon which coercive and protective methods would be upon which coercive and protective methods would be unavailing. And it is not to be doubted that Cromwell was warned of the dire consequences of affronting the Dutch, whose friendship in emergencies might be so timely and so useful to England, and Cromwell's policies were such that he was more liable to make alien enemies than friends. All other deterring suggestions failing, Cromwell must have been told that the time he had selected for his drastic policy was not a good time; that

a future time would be a better time to put into effect the English maritime renaissance he proposed, when conditions were more favorable for success.

(To be Continued.)

NEW EDITION OF BLUE BOOK OF AMERICAN SHIPPING READY FOR DISTRIBUTION.

The Seventeenth Annual Edition of the Blue Book of American Shipping, published by the Penton Publishing Company, Cleveland, Ohio, has very recently been issued.

The Blue Book of American Shipping, which long ago proved its usefulness to shipowners and others concerned, is again replete with valuable information,-giving, as it does, lists of shipowners, ship, engine and boiler builders, power and pleasure boat builders, manufacturers of gas and gasoline engines, naval architects, marine engineers, vessel masters, and members of various organizations made up from the navy and merchant marine. Particulars of American and Canadian steam and sail vessels of the coasts, Western rivers and Great Lakes, with names and addresses of owners, particulars of boilers and engines of American coast and lake vessels are published.

Particulars are also given of vessels of the United States Navy; dry docks of the United States; maritime exchanges; ship chandlers of the United States; heads of Government bureaus in the United States and Canada connected with shipping; admiralty lawyers; public works contractors; wrecking companies, etc.; steamship lines, including those operating to foreign ports, with details of service, principal offices and names and addresses of managers, purchasing agents, etc.

It is reported in the daily press that three new liners of the size and speed of the "Empress of Asia" are to be constructed in Japanese shipyards for the Osaka Shosen Kaisha. However, Mr. Edwin Orrett, local manager for the O. S. K. at Tacoma, informs us that such is not the

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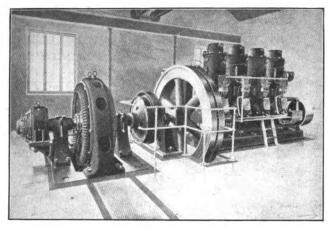
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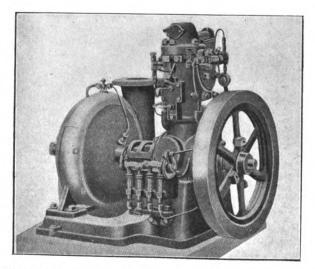
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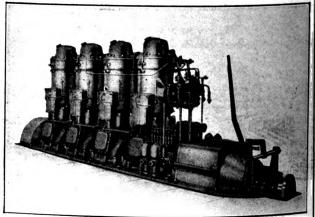
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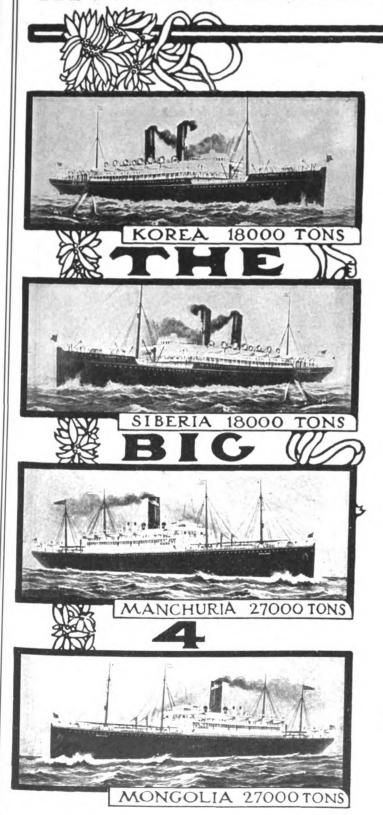
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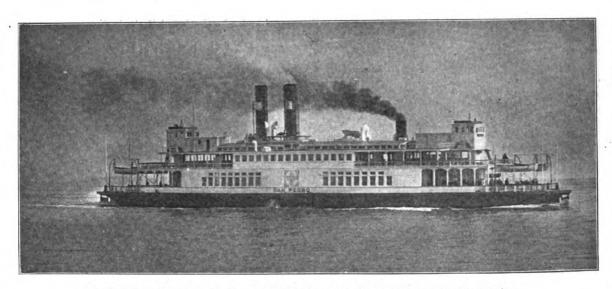
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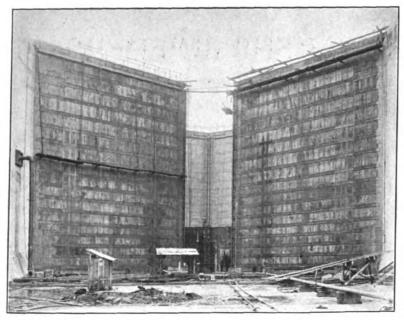
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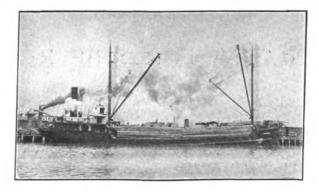
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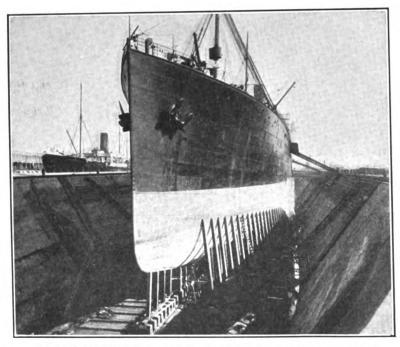
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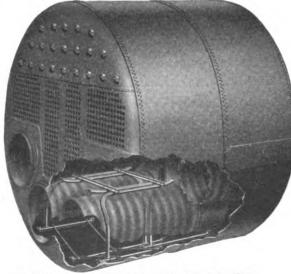
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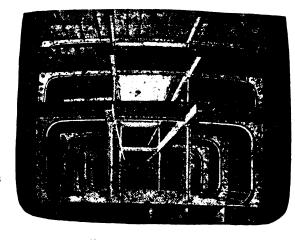
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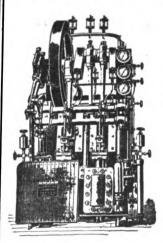
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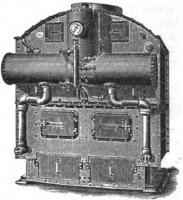
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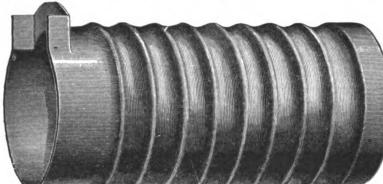
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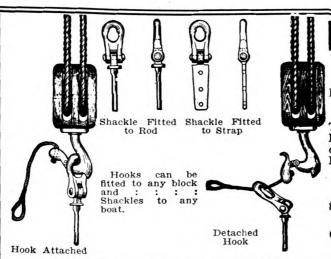
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PACIFIC MARINE REVIEW

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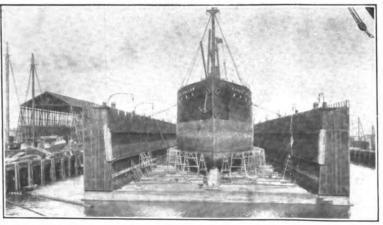
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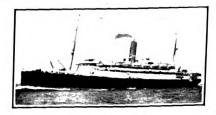
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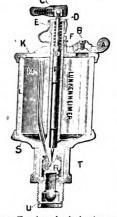
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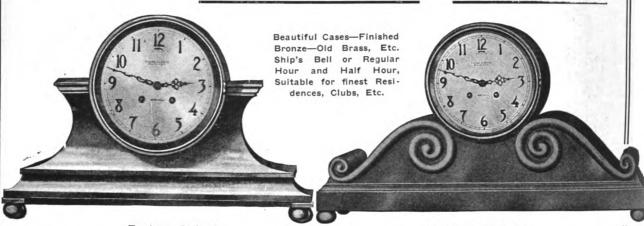
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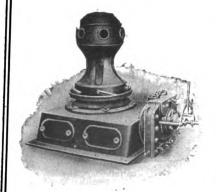
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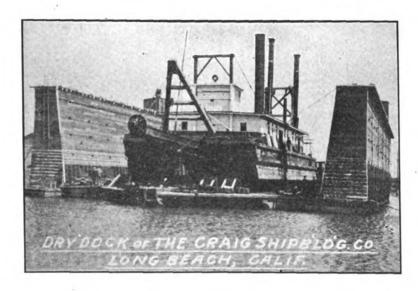
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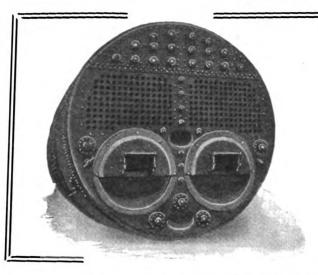
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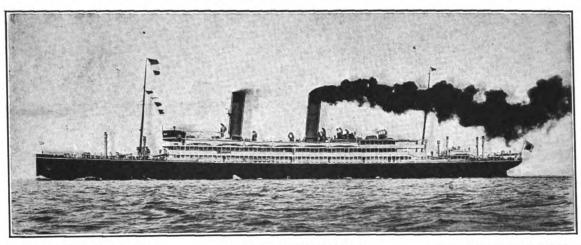
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AGENCIES THROUGHOUT THE WORLD



VOL. X. No. 11. SAN FRANCISCO, CAL.

NOVEMBER, 1913.

A NEW ERA OF PROSPERITY FOR THE COUNTRY IN GENERAL AND THE PACIFIC MARITIME STATES IN PARTICULAR

By P. H. W. ROSS

Amid all the paeans of jubilation with which the Democratic press resounds now that the Underwood tariff bill is law, there is no congratulatory note sounded on the passage of Subsection 7 of Paragraph J; and yet of all things accomplished and to be accomplished by the new law, none is so far reaching and beneficial in its effect upon our country's prosperity as this provision.

It means that at last a great political party has definitely committed itself to the beginnings of a great task; that at last a rent has been made in the dense veil of ignorance and apathy that has beclouded the horizon of our national outlook on things maritime. Very soon the horizon will clear entirely and our people will see the relations that exist between the continued prosperity of our inland manufacturers and producers and the creation of American-built, Americanowned and American-routed maritime facilities for the disposal of the things that our people make and raise.

To control the "route-ing" of the transportation of the goods you have sold and must deliver to a customer is as important by sea as it is by land.

Subsection 7 of Paragraph J provides that there shall be allowed a discount of 5 per cent. on all duties imposed by this act on goods, wares and merchandise imported in American ships. There is a proviso that nothing in said subsection shall be so construed as to abrogate or impair or affect the provisions of any treaty concluded between the United States and any foreign nations.

At first sight it might seem that the Senatorial proviso had taken all the goodly essence out of the new law, but it did not, "not by a long shot."

That for a time there will be a good deal of uncertainty and confusion is quite true and only to be ex-There always is, and always must be much dirt and digging and cluttering and clearing away in any operation anywhere before bedrock is reached for a firm foundation.

Fortunately for the country and the Democratic party the edict has gone forth that there shall be a structure, so that it is only a matter of a short time before we shall see something. Meanwhile we must be patient. It will help to be patient and confident of the future if we understand something of the nature of the "clutter" that

as national builders we must encounter and clear away before reaching the bedrock for our national maritime

There is probably no man in the United States better fitted to diagnose the case than Alexander Rogers Smith of New York. For forty years this man has devoted his life to the study and practice of maritime affairs, and his knowledge of the situation is as thorough as that of any one either in or out of Congress. He is one of the most valuable members of the National Marine League.

Following is a letter just received from him:

"Merchants' and Manufacturers' Board of Trade of the City of New York. Office of the President, 43 West 39th Street.

"New York, October 1, 1913.

"Mr. P. H. W. Ross, President

National Marine League,

Boston, Mass.

"Dear Mr. Ross:

"I have noted very carefully your letter of yesterday, just received, and rejoice at your continued success with 'the big fellows.' It only goes to emphasize what I have repeatedly said that, given the time and the means to carry on your own work in your own way, you are sure to build up a great and enduring maritime association that will become a tremendous factor for good for ages to come.

"There is not a man in Congress, I feel convinced. that at the moment could give you any kind of an idea of the actual scope and effect of Subsection 7 of the new tariff. I cannot myself. I have written to Senator X -- asking him to have a resolution introduced calling upon the Secretary of State to prepare a report showing what nations we have treaties with whose vessels and their goods are entitled to the same treatment in our ports that we accord to our own, and all limitations therein. I told him that we should be alert to see that no misconstruction of the extent of the benefits accruing to foreign nations should lead our Government into a position that will nullify the good effects, to American vessels, and to the United States, flowing from the operation of the section, such, for example, as

occurred when the Dingley bill radically revised the discrimination duty section, although the Attorney General of the United States and the Board of General Appraisers, who had jurisdiction, both declared that in making the changes in the section Congress intended no change!

"I feel sure that there will be a vast amount of confusion and annoyance in the enforcement of the section; but, as it provides a discount every foreign vessel remotely entitled to a share in the discount will clamor for it, so that the courts will surely have opportunity in time to define its scope. You know, I presume, that the only British vessels that will benefit under it will be those bringing goods from 'His Britannic Majesty's territories in Europe,' as expressed in the treaty of 1815, the only trade treaty we have with Great Britain. So that, a British vessel bringing us goods from any other part of the world than British possessions in Europe will be barred from the discount on their dutiable imports. The same will be true of all imports from Canada, whether the growth or production of Canada, or coming through, as the discount only applies to imports in vessels, and the great bulk of the \$500,000,000 of our trade with Canada comes in cars and other land vehicles, although only \$120,000,000 of this is imports, and only a part of these dutiable—thus, on the other hand, we see the limitations of the section, applicable, as is is, only to dutiable imports. But it will be enough, as to our trade with Canada, to put 'the Dominion on Wheels,' otherwise known as the Canadian Pacific, and all other transcontinental Canadian railroads, to a great deal of annoyance, and have a strong tendency to cause importers of dutiable imports to avoid bringing them in through Canada. I want you to particularly note the sturdy howl that that lively cub of the great lion will put up as the distressing truth dawns upon it. Again, French vessels will not be entitled to the discount. I believe, too, that goods from Great Britain, but transshipped there for transit to the United States, will be barred, if coming in British vessels, from the discountand, as the great entrepot of Europe, the amount of this transshipment is LARGE.

"I have just been going over some figures that should interest you. Of our entire waterborne foreign commerce during the fiscal year ending June 30, 1913, valued at \$3,773,060,924, the value carried in British vessels was: Imports, \$870,809,492 and exports, \$1,174,144,-838 or 51.9 and 56.5 per cent. respectively, a total of \$2,044,954,330 or 54.2 per cent. of the whole. In American vessels: Imports, \$193,094,242 or 11.3 per cent., and exports, \$187,938,253 or 9 per cent., a total of \$381,032,-495 or 10.1 per cent.; leaving to all other foreign vessels the carriage of: Imports, \$633,758,375 or 37.3 per cent., and exports: \$713,315,724 or 34.3 per cent., a total of \$1,347,074,099 or 35.7 per cent. And I have just computed the value of everything brought into the United States from Great Britain and her possessions in all parts of the world, which have a value of \$573,897,835; while the exports from the United States to Great Britain and her possessions had a value of \$1.133,633,716; so that British vessels carried the equivalent of everything Great Britain and her possessions sent to or took from us and a tidy margin of \$336,542,548 worth additional-'going some'!

"Well, I think the new subsection is designed to 'put a crimp into that,' to quite a distressful extent.

"I had John Temple Graves to lunch with me yester-day, and he inquired, very pointedly indeed, about and after you, and I was glad to say the best things possible about you and the great work you are engaged in.

"I appreciate, I think as clearly as anyone can, what the League is doing. It comes into being when our shipping is at its lowest ebb, and it has a magnificent work ahead of it, which, properly fortified to undertake, the League should succeed in, to the glory of all connected with it, but of vastly more importance to the country as well.

"If you talk about the new subsection on discriminating duties, say to everybody that the next great step is to have every trade treaty that compels us to extend to imports in foreign vessels the same treatment we accord to imports in our own abrogated—work enough for a legion of friends, but which must be accomplished.

"Sincerely yours,

(Signed) "A. R. SMITH."

And now a word as to what this all means to the country in general and the maritime States of the Union in particular.

I believe the great trouble with most of us in our consideration of the American shipping question is that we are too limited and specific in our views. We think of shipping as a thing "per se" and not as one of many links in the chain of commerce. Whenever the question is opened, a "great howl goes up" to the effect that the nation is being bled so that Cramps or some other shippard may make a lot of money. As a matter of fact the importance of American shipping to American agriculture, manufacture and industry in general and particular is far greater than it is to the citizens who happen to choose the building and running of ships as a means of livelihood or profit.

In the first instance it is a matter of unescapable economic necessity, in the second the choice of one out of many ways of employment of capital and labor.

The enormously valuable byproducts of shipping are far greater than shipping itself. For instance, at Liverpool, London, Hamburg, Havre, Trieste, Hongkong, etc., there is a kind and a range and a variety of extremely profitable businesses that should flourish at New York. Boston, Philadelphia, New Orleans, San Francisco, Portland, Seattle, etc., but which exist if at all, only in very limited and rudimentary fashion.

The reason is this: America does not make proper use of her maritime potentialities. The maritime States of the Union do not sufficiently occupy themselves with businesses THAT ARE MARITIME.

But Massachusetts has done one very great thing. By her improvement of the port of Boston she has followed the example of the wise virgins in the parable. She has oil in her lamps. She will be ready when the bridegroom comes, and fortunately for us all, he is on the way. California, even wiser, has retained State ownership of her harbor front.

The Democratic party has sounded the annunciator. It is well that it has.

The country has called for greater freedom of trade and less protection. But we must remember that free trade means free selling as well as free buying. No nation can freely sell without its own ocean delivery wagons, its own Merchant Marine. The thing is impossible.

Moreover no country can freely sell without foreign banking exchange facilities under the control of its own citizens; branches of American banks in foreign cities, as well as branches of foreign banks in American cities, and this great measure of freedom the Democratic party is giving us in the new Currency bill that is pending. The results will be astonishingly beneficial to American manufacturers.

So California, in common with all other of our mari-

time States may well be congratulated on this great thing that has happened. For it means that the marine side of our country's activities will come into its own, and those States that are best prepared for the American Marine Renaissance now dawning will profit the most.

Bank deposits and exchanges at our great seaports, threatened somewhat by depletion because of the new regional reserve banks, will increase as never before because of the legitimate accretion that inevitably attends the proper use of every form of marine business and the development of businesses collateral and germane

It is only by the export of manufactures and the national retention of every "byproduct" thereof such as ocean transportation, marine insurance, foreign banking discount and exchange facilities that any nation ever has or ever can pass from the stage of debtor nation, as we now are, to that of creditor nation as Great Britain and Holland are.

For the past fifty years the Republican party has been mainly instrumental in the stupendous task of building up our continental prosperity and stability, and wonderfully has it been done.

To the Democratic party is committed another task, more intricate, more delicate, the work of a matured republic. It is the marine independence of America, the logical sequent of our continental independence in which the great Democrat Jefférson played so strong a part.

And it is a supreme satisfaction to the members of the National Marine League that in what has passed they have had some share and that in what is to come they will have still larger opportunities of usefulness.

COPY OF RESOLUTION INTRODUCED BY P. H. W. ROSS AT THE NATIONAL CONVENTION OF THE AMERICAN BANKERS' ASSOCIATION AT BOSTON, MASS., OCTOBER 9, 1913.

Whereas, We believe that to insure the successful operation of a new banking law, it is essential that a clear understanding of the conditions contributing to such success should prevail; and

Whereas, The world-wide equilibrating effects of the Bank of England discount rate are only possible because that country's banking affiliations are perfected through the development and excellence of its maritime facilities and its overseas commercial transactions; and

Whereas, By the operation of the new tariff bill the industries of this country will have to be adjusted to a freer foreign selling basis as well as a freer foreign buying basis; and

Whereas, This convention has already adopted the report of the Chicago Currency Commission wherein by Section 28 provision is made for the establishment of foreign branches of National Banks; and

Whereas. The whole structure of foreign trade, the adequate export of American manufactures and produce, the revival of American shipbuilding and the interminable ramifications of banking transactions that underlie, support and sustain every variety of our foreign commercial enterprise depend upon the existence of American-built, American-owned and American "route-controlled" ships;

Resolved, That the American Bankers' Association in convention assembled urge upon the Congress of the United States the paramount national necessity of not United States the paramount national necessity of nor lightly or hastily rescinding the 5 per cent, rebate clause favoring United States ships, until full and deliberate investigation has been made as to the bearing of this clause upon the welfare, not only of the shipping trade, but of the banking, exporting, agricultural and manufacturing interests of the country at large, especially as they will be affected by the operation of the new tariff bill.

The urgent adoption of this resolution is requested because of the protests now being made by foreign nations against this very mild attempt on the part of Congress to help the expansion of American foreign commerce; not content that America should build a Panama Canal for the convenience of their foreign com-Panama Canal for the convenience of their foreign commerce (we having almost none of our own); not content that by the new tariff their goods are admitted into our country in vastly increasing quantities, our foreign commercial rivals demand that we should rescind our own laws, and refrain from the only economically possible method of selling our goods to any one else excepting to oursalves. ing to ourselves.

P. H. W. ROSS, Delegate.

Resolution accepted and referred to Executive Committee for action.

United States Senate. September 23, 1913.

Mr. J. S. Hines, Publisher Pacific Marine Review, 24 California St., San Francisco, Cal.

United States Senate.

September 23, 1913.

Mr. J. S. Hines, Publisher Pacific Marine Review, 24 California St., San Francisco, Cal.

My Dear Mr. Hines:

I have yours of 17th instant enclosing extracts from the September issue of the Pacific Marine? Review developing the rather discreditable (to us as a nation) fact that "no American ships in the foreign trade will pass through the Panama Canal in 1915."

There is nothing of more importance to us as a nation than this very thing and it is equally important from a military standroint in times of possible war. I note your inquiry as to my "idea concerning a possible chance for the rehabilitation of the American Merchant Marine in the foreign trade." I believe that there is not only a cossible chance, but that it is inevitable that our shioping engaged in the foreign trade will be again built up and fully restored. Apparently one of the first things we will have to do, and if I remain in the Senate I hope to be able to give attention to it, and that is to so revise and modify our treaties with foreign countries that we will not be confronted by some antagonistic treaty provision every time we undertake to pass a statute granting some favor to our domestic ships in the foreign protest after foreign protest was lined up in opposition to the provisions in the bill as it passed the House making a discrimination of 5 per cent. preferential reduction in tariff rates upon all goods imported in American ships.

Ore tring which must be preliminary to securing the reeded legislation to restore our Merchant Marine is an interested and favorable public opinion. It is impossible to secure the action of Congress upon vital matters unless it feels the spur of public opinion. This is due to a multifude of things one is the universal vis inertia, which is ere of the construction. There are gone in the construction and construction. There are gone in the control of the construction of the provision of the modification of provision and construction. There are some little exceptions,

House of Febresentatives. U. S.
Washington, D. C., September 23, 1913.
Mr. J. S. Hines, Publisher Pacific Marine Review,
24 California Street, San Francisco, Cal.

24 California Street, San Francisco, Car.

My Dear Sir:
I beg to acknowledge receipt of yours of the 17th Instant. with enclosures. Ever since I have been in Congress, I have been fighting for the upbuilding of the American Merchant Marine. Unfortunately, many members come from the interior of the country. The only idea they have about anything that approaches a vessel is a prairie schooner. They have always been able to block the efforts of the friends of the American Merchant Marine. As soon as I have had an opportunity to read the articles I will communicate with you.

Yours very truly,

(Signed) JULIUS KAHN.

OUR NEWEST AND LARGEST COASTWISE VESSEL, THE S. S. "CONGRESS"

The twin screw passenger and freight steamer "Congress," which was constructed for the Pacific Coast Company by the New York Shipbuilding Company, Camden, New Jersey, on plans and specifications prepared by George W. Dickie, arrived in San Francisco harbor on Oct. 6th. The "Congress" brought 3500 tons of general freight, which was discharged by the 12th, a reception was given on board on the 16th, and she sailed for Seattle on her first trip on the 18th. This vessel has been partly described in previous issues of the "Pacific Marine Review," but as she contains many features which are novel to the coasting service a more detailed account is sure to prove acceptable to our readers.

Changes in the Federal law relative to the boating of passenger steamers, which followed so closely on the heels of the "Titanic" disaster, increased the weight to be carried on the boat deck of this vessel so materially

ND ELEVATOR

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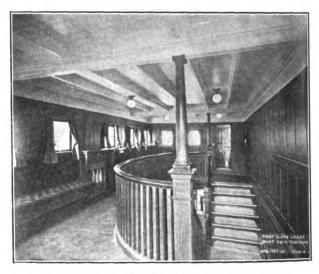
VIEW FROM FLYING BRIDGE, SHOWING BOAT STOWAGE AND LIFE RAFTS, S. S. "CONGRESS."

that it was deemed advisable to increase the beam 1'9" in order to maintain the original designed stability. As the steel for hull construction had already been ordered, this change resulted in a material delay of the actual starting of construction, but the time from the laying of the keel to the turning over of the "Congress" to her owners was only ten months and twenty-five days.

The "Congress" was given a successful trial trip on the 17th and 18th of July, and after receiving the finishing touches at the shipyard proceeded to Port Richmond, Philadelphia, to load. She passed the Five Fathom Lightship off the Delaware breakwater at noon Aug. 10th. The run was made to San Francisco by way of Port Brighton, Trinidad, and Taltal, the distance covered being about 15,000 miles, and the steaming time 51 days and 16 hours. The main engines gave perfect satisfaction on the way out, never being slowed or stopped once,

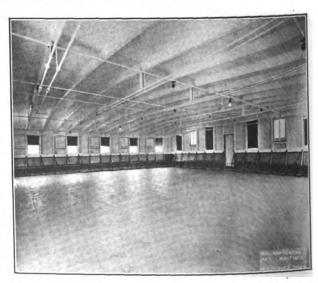
and the oil burning installation also worked splendidly. Four boilers were used for about one-half the trip, the rest of the distance being run with five or six boilers cut in.

The "Congress" is divided into eleven water-tight compartments by ten complete bulkheads extending to the upper deck. The double bottom, which runs from peak to peak and extends to the upper turn of the bilge, is likewise divided. The double bottom is fitted with floors on every frame and the foundations under the engines and boilers have been made especially heavy. As a further precaution against external injury, longitudinal bulkheads have been fitted the full length of the boiler rooms. These bulkheads extend from the inner



FIRST-CLASS LOUNGE-BOAT DECK FORWARD.

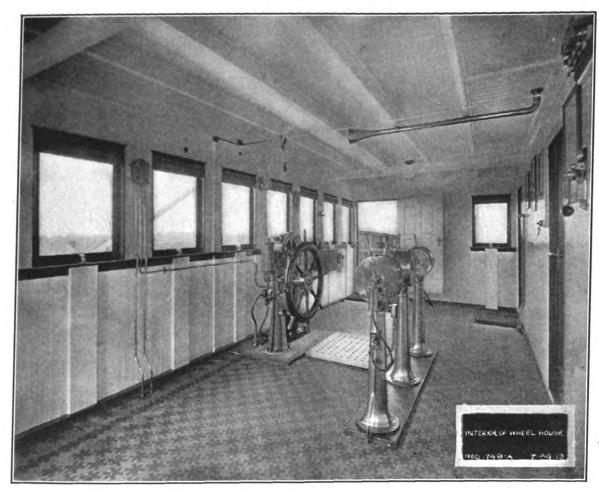
bottom to the upper deck, are entirely independent of the skin or double bottom of the ship, and are built strong enough to stand a heavy pressure. All watertight compartments were thoroughly tested to a head of ten feet above the load water line.



AN ATTRACTIVE FEATURE OF THE NEW LINER "CON GRESS" IS THE BALLROOM.

The cargo holds on the "Congress" are large and great care has been exercised in the placing of pillars in order to get the runways for handling cargo as





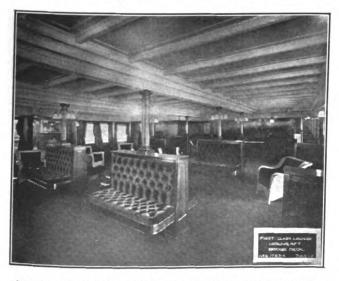
INTERIOR OF WHEEL HOUSE.

clear as possible. An automobile hold has been provided whereby the largest cars can be shipped through side ports and be carried under cover. This hold will easily accommodate twenty of the largest makes of touring cars. The total freight capacity of the vessel is about 5400 tons (measurement).

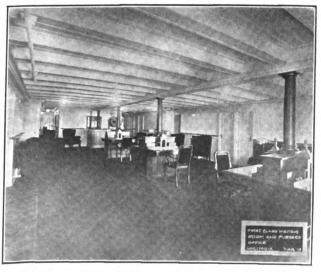
Steam is furnished by ten Scotch boilers working under natural draft and fitted with the Dahl oil burning system. These boilers are arranged in two boiler rooms, the forward fire room containing six boilers and the after four. The engines consist of two sets of triple expansion engines developing about 7500 h. p. on about 94 revolutions. The dynamo room is located at the

after end of the shaft alleys and is fitted with three 50-kilowatt direct connected generators. The dynamo room is ventilated by a wide steel trunk which extends up through the boat deck.

As many radical changes in passenger accommodations were introduced on the "Congress" a great amount of care and study was given to this department of the ship, the designer and the owners being extremely anxious to meet with the approval of the traveling public in every respect. Commencing at the bridge, which is of the inclosed type so popular on the Atlantic liners, at the forward end is the wheel house, which has a width of 26 feet and opens at either side to the flying bridge,



FIRST-CLASS LOUNGE-LOOKING AFT BRIDGE DECK.



FIRST-CLASS WRITING-ROOM AND PURSER'S OFFICE.

.org/access

Domain,

which extends for four feet on each side beyond the beam of the vessel. The wheel house is very attractive with its bright dreadnaught flooring. Aft of the wheel house is the chart room with signal and officer lockers and officers' toilet. Aft of the chart room are the quarters for the officers, wireless operators and deck engineers.

At the forward end of the boat deck is the captain's quarters, extending the full width of the house, and fitted en suite with bath, bedroom and parlor. This room is finished in mahogany and green plush. Immediately aft of the captain's room is the first-class smoking room in flemish oak and leather upholstery. The smoking room is fitted with a buffet bar and toilets.



CAPT. N. E. COUSINS, MASTER OF THE S. S. "CONGRESS."

On this deck also are two deck lounges which form entrances for the first-class stairways. These lounges are in oak with red plush upholstery, and should prove attractive lounging places. A well-arranged wireless office and operating room is also on this deck aft of the stacks. The after end of the boat deck is given over to a ballroom. This room is the full width of the vessel and the roof is constructed without pillars, giving a dancing floor free from all obstructions.

The deck house on the bridge and forecastle deck, which on this ship is the weather deck and the main promenade, has at its forward end the main lounge, a very large room finished in mahogany with green upholstery. This room is fitted with bay windows of large size and is very light and airy in appearance. Aft of the lounge are 44 first-class state rooms and six special rooms with private baths and toilets. An attractive feature on this deck is the second-class public rooms. These rooms, smoking room and lounge, are handsomely finished in oak and are well lighted and cool.

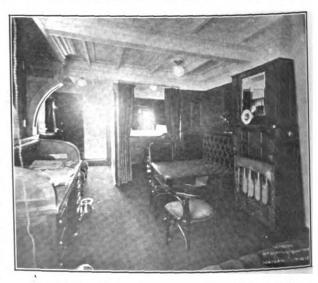
second-class passengers have their own promenade on this deck.

The forward end of the passenger accommodations on the shelter deck is occupied by a large writing and lounging room and by the general office of the ship. All the state rooms on this deck are very large and the suite rooms are elegantly finished in oak, mahogany and birdseye maple, with creton paneling. The passenger rooms have been so arranged throughout the ship that the passenger can reach any of the public rooms with perfect ease even in the very roughest weather.

The side plating of the "Congress" is cut away at the shelter deck about 100 feet from the stern, thus forming a promenade for the third-class passengers and crew. By this means the engine and boiler room and steward's crew are given a promenade deck to themselves which they can reach without in any way coming in contact with passengers. At the after end of this deck is the steering gear house and forward of it the third-class dining room. Steam capstans are fitted on this deck for working the stern lines of the ship and, as they are placed on either side of the steering gear house, form a simple and quickly attached arrangement for an emergency steering gear.

At the forward end of the public spaces on the upper deck is the main dining saloon fitted to accommodate 216 at four-seat tables. The tables, seats and paneling up to the chair rail in this room are mahogany, from the chair rail to the upper turn of the cornice is finished in old ivory tint in paripan enamel, and the beamed ceiling is finished white. The floor is laid in dreadnaught tiling. Aft of the dining room on the port side are the kitchen, pantry, scullery, steam kitchen, butcher and baker shops, all of which are the results of many months of study. The satisfactory result obtained is largely due to the untiring energy and interest in this matter of Mr. H. K. Laidlaw, port steward of the P. C. S. S. Co., who has taken the greatest interest in the matter during the entire time of planning and constructing the ship. Aft of the galley are accommodations for the engine and fireroom and steward's crew, which extend to the second-class pantry and dining room, a handsome apartment in oak. Aft of this dining room are the second-class quarters arranged in two, three and four berth rooms.

The electric heating, power and lighting systems on the "Congress" are very complete. The heating in the public rooms and staterooms is all accomplished by

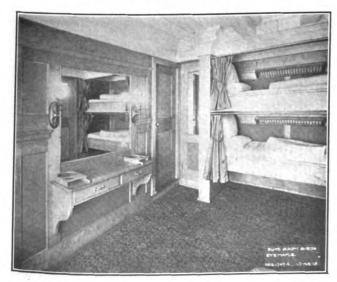


CAPTAIN COUSINS' RESIDENCE ON BOARD SHIP.



electric glow heaters of the luminous type supplied by the General Electric Company. These heaters give out a pure, dry heat and were given a thorough tryout while the vessel was in southern latitudes coming around and worked with great satisfaction. The heaters in the corridors are of the tubular type. Aside from the large ventilating fans, there are no less than fifteen motors operating machines in the kitchen, galley and pantry. The lighting system is remarkably complete, upwards of 1400 lights being installed and all parts of the ship can be lighted with great brilliancy.

The sanitary features on the "Congress" have been worked out with much care. The public toilets in the first-class accommodations have been grouped amidships on both the shelter and bridge deck. Double steel walls



ONE OF THE BRIDAL CHAMBERS-IN BIRD'S-EYE MAPLE.

18" apart have been run up between the port and starboard toilets and all the sanitary piping is carried between these walls where it is accessible without entering the toilets. A large exhaust fan sucks the air out from between these walls so that the air current is always through the toilets and up this trunk, it being discharged sixteen feet above the boat deck.

The "Congress" is fitted with fourteen 27-foot life boats and fourteen life rafts. Both the rafts and boats are of special design and are well in excess of government requirements. The combined capacity of the boats and rafts is 854 persons which is considerably in excess of the number of souls on board when the vessel is full up.

The boats are handled by the Norton Sheath Screw Davits and fitted with the Randall releasing gear.

The "Congress" was brought around to this Coast by Captain Howard C. Thomas, who had as his first officer Captain Geo. Zeh. Chief Engineer Ben Martland and his crew made an enviable record with their machinery and the ship herself proved a fine sea boat and handled very nicely in making a difficult mooring at Port Brighton and also at Taltal.

Among the firms who furnished the equipment on the S. S. "Congress" are the following:

General Electric Company, Schenectady, New York, who installed electric heaters throughout; Knight-Thomas, Inc., Boston, Mass.; Herzog & Dahl, San Francisco; A. Lietz Company, San Francisco, sounding machine and compasses; Barrett & Lawrence, Inc., Philadelphia; Nicholson Ship Log Company, Cleveland, Ohio; Submarine Signal Company, The Holtzer-Cabot Electrical Company, Boston, Mass.; Chas. Corey & Son, New York; The McNab Company, Bridgeport, Conn.; Rushmore Dynamo Works, Plainfield, N. J.; The Hyde Windlass Company, Bath, Me.; Riggs & Brothers, Philadelphia, Pa., and Phillip Strobel & Sons, New York.

NEW SAILING SCHEDULE OF PACIFIC COAST STEAMSHIP COMPANY.

The Pacific Coast Steamship Company recently made some few changes in the sailings of their vessels operated on the Seattle-San Diego run. These changes include the following:

Port Townsend has been discontinued as a port of call for all steamers. Redondo Beach, Cal., has been discontinued as a port of call except for the S. S. "Queen," southbound only. Every alternate week a new through service has been provided by placing the S. S. "President" in service leaving Seattle Tuesday

morning at 10 o'clock, Victoria Tuesday evening at 4 o'clock, arriving San Francisco Thursday evening and departing for San Pedro Friday afternoon at 4 p. m., arriving at that port Saturday afternoon and connecting with the S. S. "Queen" at that point for San Diego. Returning, the S. S. "President" will leave San Pedro at 10:30 a. m. Sunday, arriving San Francisco Monday morning, leave San Francisco Tuesday at 2 p. m., arrive Victoria Thursday 2 p. m. and arrive at Seattle Thursday night. On the week alternating with this the S. S. "Umatilla" will leave Seattle on the usual schedule, plying locally to San Francisco.

S.S. CONGRESS

august 8th 1913 to



October 6th 1913.

Maiden voyage Philadelphia to San Francisco

Senor Purser-Chief Liar Senor Joc - Sawbones Senor Stops-Simoleon Keeper.

Dedication.

To Captain Howard C. Thomas, navigator, friend and good fellow, the following humble effort of three land-lubbers is respectfully dedicated.

Our only fear, in selecting the Captain as a subject of dedication, is that we will fall far short of what such a dedication will lead any stray reader who chances to tumble into these pages to expect. As an excuse we will offer the undeniable fact that there was no one else around to dedicate this iniquitous jumble of near truth to and, as the Captain, while far from meek, is of a forgiving disposition, we can only hope that he will consider the source, waive all claims for damages and take his medicine like a man.

We boldly ask, "Where could we find a better man than the Captain to dedicate anything to?" and echo answers, "Nowheres or anywheres else." Did he not bring us safely into port after fifteen thousand miles of wandering, and mark you this, despised reader, that this feat of seamanship was accomplished under grave and harassing difficulties, for the Captain had other and weighty cares besides the navigation of the ship. Did he not have under his watchful eye and tutorship a dog and a parrot? Was he not responsible for their souls?

No more excuses are necessary and we will say with Eugene Field:

Go, little booklet, go,
Bearing an honored name,
Till everywhere that you have went
They're glad that you have came.

Log of S. S. "Congress", Philadelphia to San Francisco. Leg One.

It is a time-honored custom to put an introduction in front of all literary efforts and, by the by, it is also

a mistake. We warn the reader that he or she will find no introduction here, as we have placed it where all such impediments to the narrative belong, namely, in the appendix. If you wish to learn Doc's pedigree, or why an otherwise honorable person should be referred to as "Slops," it is only necessary to delve dilligently in the pages at the end of this book and you can satisfy the most avid curiosity with a mass of particulars concerning these worthies and others.

If the reader now fully understands to look for details as he wants them, we can proceed with the log. The Steamer "Congress" pulled into the stream from the Richmond docks, Philadelphia, on Friday evening, August 8th, at 5 p. m., and dropped down stream to the yards of the New York Shipbuilding Company, where she anchored for the night, and the following morning proceeded to take on oil fuel. The crew consisted of seventy all told, the cargo 3400 tons of freight consigned for San Francisco and last, but by no means least, Jack, the dog, poll, the parrot, and the inevitable ship's cat. Leaving our anchorage at 3 in the afternoon we steamed down to the breakwater and again anchored. Early Sunday morning the ship got under way, compasses were given a final adjustment and we put the pilot over the side, laden with mail and documents, and headed out to sea. At 12 noon we passed the five-fathom lightship, and it is from this point that our real journey begins.

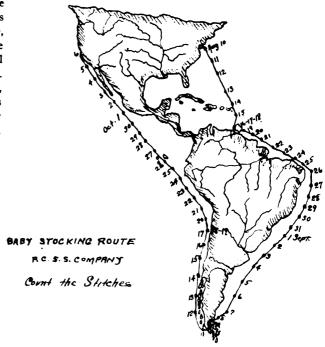
To all appearances little of interest could happen in a straight away run to Trinidad, and yet it is the trivial things which count on shipboard and of these there were many to attract the attention of three inquisitive persons. We discovered that the engine and fireroom crews were mortal enemies to monotony, and that scarcely a day went by without its quota of fun. The

tremendous appetite of "Red," one of the oilers, the ardent strivings of two Germans to express themselves with the proper degree of force in the English tongue, the yarns and experiences of men who had visited the Seven Seas with wide eyes and receptive ears, all served to pass many entertaining and instructive hours. We were not entirely idle with all this. Mr. Ottesen, the ship's steward, can tell you that we put mattresses into their covers, that we performed the like office for pillows, that we polished brass and nickel-plated fittings, and that we helped with the ship's inventory. The chief engineer could disclose a wild tale of the doctor and the purser arrayed in the humble but honorable overall and armed with paint brushes. Chips, the carpenter, would contribute the doctor's wonderful incisions on a three-inch oak plank with a cross-cut saw. Mr. Zeh, first officer, could make unbelievable statements concerning the setting of sails every time we had a fair wind. We would have told you all this ourselves but modesty forbade us.

When we tell you that mal de mere was an unknown equation we can hardly expect to be believed, but then a prophet is ever without honor in the land of his birth. It is true, indeed, that the three of us were uncommonly fond of the fresh air for the first few days out, but ideal weather allowed us to get our sea legs in due course of time. We had some rough sea but it came too late to affect us, and a prouder trio you could hardly find when one of the quartermasters succumbed while we ate welsh rarebit with immunity. Some worthy medicos maintain that the root of seasickness lies in the brain. If this be so it would stand little chance with us, for what would it find to seize upon? Other learned professors plant their spectacles far down upon their noses and lay the curse of the sea to the stomach. Again we can prove an alibi. Our steward fed us so splendidly that we never missed a meal and we would even leave off working when dinner was announced.

Before leaving Philadelphia the "Congress" had been entirely closed up for a month, and we brought away a whole shipload of that climate for which the City of Brotherly Love and pepper pot, ice cream and prayers is so justly famous. The result was that all the way to Trinidad no one went to bed in the real sense of the word. Going to bed meant stripping and lying down on top of the berth. The air was heavy and sticky and the only comfort obtainable was lying on your back on a hatch cover and looking up at the stars as the ship moved lazily onward.

Leaving Philadelphia we had on board a representative of Strawbridge & Clothier, which firm had done a large part of the outfitting, and this gentleman, Bennett by name, accompanied us to the Breakwater for the purpose of finally checking up some articles. Bennett was a queer fish-very. As he was to spend two nights on board he brought along a night shirt—a real lacy, delicate affair-of which he was inordinately proud. Oh gentle but sour-faced reader, you will never understand how hot and stuffy that ship was or how poor Mr. Bennett perspired so freely that his feet splashed and gurgled in his shoes. He stood it for ten minutes and then said, "Oh, purser, I can't stand this a moment longer; my shirt is wringing wet," and away he would trot to change his shirt for his night shirt, begging the aforementioned purser not to tell the others of his dishabille. At least forty times that day did the shirt and night shirt change places. When we had signaled



for the pilot boat to come and get the river pilot everyone began to kid poor Mr. Bennett about the fate which awaited him when he attempted to descend the Jacob's ladder. Poor chap. He was laboring under the impression that the pilot boat came alongside, but when a small dory put off towards us the firm of Strawbridge & Clothier were in grave danger of losing a foreman through fright. His knees knocked together, his teeth rattled and his complexion faded to a dead white, not the ordinary white, but a sort of blue, fishbelly white. The fatal moment was at hand, he must descend, so letting the ever-present and previous nightgown down by a rope he assumed a do-or-die expression and descended the swaying ladder with visions of his different heart captivators quivering before his agonized eyes. He made it all right, but we are of the humble opinion that whenever Mr. Bennett sits down to his evening paper and his eye catches the name "Jacob" that he will be seized with a nervous chill.

Slowly but surely we forged our way southward towards the tropics, but it did not get any hotter, for the good Lord only made one place hotter than Philadelphia, and modesty forbids us mentioning this locality before ladies. On Friday night, August 15th, we caught the gleam of Sombrero light on one of the Little Antilles, and Saturday morning we entered the Dragon's Mouth.

The Dragon's Mouth is a passage varying in width from five to ten miles, and flanked on either side with high mountains, which rise precipitously from the water's edge, and are covered with a dense tropical growth of mahogany and palms. After a week at sea you can well imagine that every minute of time through these straits was spent on deck, and the dense green foliage of the forest was a restful sight to the eye. Onward we drove into the great land-locked gulf of Cartagena. This body of water is bound to become of great importance with the opening of the Panama Canal and will give England a remarkable foothold in the Carribean. Imagine a great sea with unlimited anchorage for vessels of the greatest draft and only two entrances, the



one through which we sailed and the Tiger's Mouth, a shallow, dangerous channel which is not attempted except by light draft vessels. Both of these entrances can be rendered impregnable to the assaults of a hostile fleet, and the Island of Trinidad needs no communication with the outside world to be self-supporting, as far as food is concerned. Straight through the placid heart of this gulf we steamed, and about 5:20 in the evening dropped anchor off Port Brighton.

Brighton is situated in one corner of Trinidad and

is protected by a long promentory which separates the gulf from the ocean. The island here is hilly but low, and the waterfront presents a long, white, sandy beach, with clumps of palms and jungle growth interspersed with clearings. A long, narrow wharf runs out to deep water, carrying a conveyor which is used for loading asphalt, the sole export, as Brighton is practically the private port of the Barber Asphalt Company. Our arrival did not seem to arouse any enthusiasm as there were no signs of life on shore. The captain put off in one of the ship's boats and went up to the landing, and returned and was followed shortly by the British port officer with his black, laugh-This official ing crew. boarded us, and from him and some of the officers of the asphalt company we gathered quite a little information.

Brighton has a population of forty-five white and five thousand colored, black with sprinkling of Chinese, Hindus, Malays and aborigines. As the port officer ex-

pressed it, "The town is divided into two distinct sections, nigger town and coon town." Wages are five, six and seven cents per hour, and the chief amusement of the population is Jamaica rum. The nigger is a much-married individual. Divorce consists in kicking his wife out of doors, or the other way about, when the wife does the kicking. The profession of matrimony is the only one in which the nigger displays any energy, a new wife is always chosen before the old one is discarded. The asphalt company built some comfortable barracks for their colored help, but the effort was wasted, for women, children, men, ants, fleas, mosquitos, parrots, flies, vermin, razor-back hogs and pet alligators all live in the same room.

Sunday morning the ship was breasted across the end of the narrow wharf in six and one-quarter fathoms of water, and the captain expressed himself as highly

pleased at the way she handled. Then began a long, tedious wait for oil. There were no oil pumps and with the heavy Brighton oil, gravity feeding was about as slow as the forced feeding of a suffragette in an English

Doc and Slops went on shore. Indeed, Slops and Doc were not quite accountable at any time for their actions. There is much to be seen at Brighton and a man could spend a whole day here with much interest and even pleasure, but we defy the most hardened wanderer to

live out a week of it. The aborigine women are not believers in Mother Goose. "Rings on her fingers and bells on her toes" has no meaning for them as they are addicted to "bells on their fingers and rings in their nose." Pet alligators can be seen in some of the yards. These animals sleep peacefully with one eye open, and likewise their mouth, which is to say about onehalf the entire animal. Sometimes a venturesome chicken, which has a leaning towards dentistry as a profession, will wander into this yawning cavern, and then it is a case of "Alas poor Yorick, I knew him well." Lizards about three feet long keep flitting across your path, and if you really care for such companionship, you can find leopards and pythons and boas upwards of forty feet long and with bodies as thick as a man's right back in the jungles.

The Brighton nigger speaks a soft kind of jargon which is hard to understand at first, but after awhile you can make him out plain-His favorite lapsus ly.

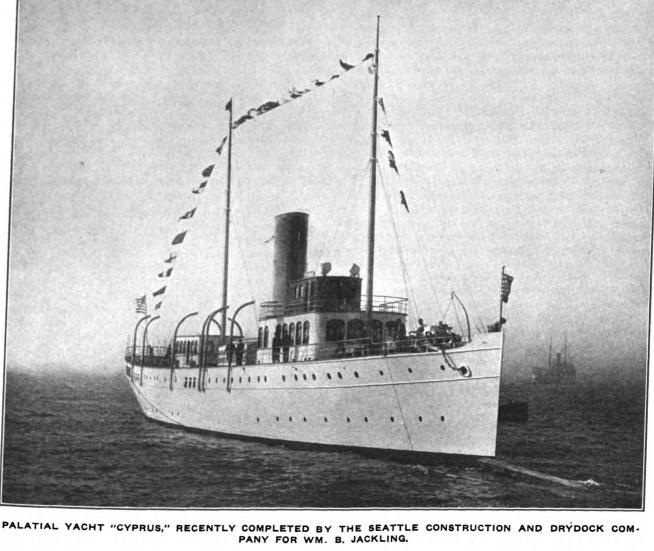
lingua is to make two syllables out of one syllable words. In common with his American cousin he is somewhat musical and the two bucks who were left in charge of the oil line over night treated us to a concert and dance on the end of the wharf in the evening. We threw them silver and pennies and wire nails and washers, and there was great scrambling over the spoils

Doc lost his heart to two village belles and was so far carried away by their splendiferous charms that he took their picture and wept like a child when the inevitable parting came. Doc has not been the same man since this episode, but wanders about all day with a woe-begone expression, and we catch him occasionally whistling "The girl I left behind me."

(To be continued.)



CAPT. H. C. THOMAS, WHO BROUGHT THE "CON-GRESS" AROUND



THE "CYPRUS," BUILT BY THE SEATTLE CONSTRUCTION @ DRYDOCK CO.

The private yacht "Cyprus," one of the most beautiful and palatial pleasure boats ever built and the finest that has ever been constructed on the Pacific Coast, was recently completed at the plant of the Seattle Construction & Dry Dock Co.

The "Cyprus," owned by Daniel C. Jackling of Salt Lake City, was designed by Irving Cox of Cox & Stevens, New York, and built at a cost of approximately \$500,000 under the personal supervision of Mr. Cox and is the first ocean-going steam cruising yacht that has been equipped to burn fuel oil. The vessel is 231 feet long with thirty foot beam and draws fourteen feet. She has a speed of eighteen knots and is propelled by two four-cylinder triple expansion engines with a total of 3500 horse-power. She has four Babcock and Wilcox boilers with a total heating surface of 10,000 feet. The entire machinery equipment is installed in duplicate.

The "Cyprus" contains every modern device and improvement that makes for luxury and convenience. The fixtures and furnishings throughout are costly and beautiful. In the interior finish of the yacht were used rare eastern woods never before seen in America. The dining-room on the main deck is built of teakwood in its natural state and the trimmings of the woodwork are beautifully carved. The smoking-room is of varnished

The music-room is paneled with Jaya teak, finished in soft amber tones and has an open fireplace. The library is paneled in Thibet mahogany. The vessel has eleven staterooms, finished in ivory enamel with mahogany trimmings, each one of them elegantly furnished. The electric fixtures are all hand wrought to conform to the scheme of the various rooms. The main hall, or gun-room, is finished in Burmah teak and fitted up as a sporting room. It is supplied with all sorts of hunting and fishing equipment. The sun parlor is built the full width of the yacht. It is also finished in varnished Burmah teak and is separated from the library by a steel watertight partition and door. A feature of the "Cyprus" is the breakwater on the forward deck to prevent the wash from the heavy seas from running back to the house. It also has rolling keels on the hull to steady the vessel in rough weather. Besides this, she has two searchlights, one on either side of the pilot house. The "Cyprus," when she goes into service early in October, will carry a crew of forty men and be under the command of Capt. Alexander Corkum.

Mr. Jackling, the owner of this palatial yacht, is the president of the Utah Copper Company, the largest concern of the kind in the world. He is interested in various other large copper companies in the west and

is a big owner in an Alaska mining concern which is now spending nearly \$7,000,000 in the development of its property near Juneau.

Mr. Jackling plans to use his yacht for cruising in Alaskan and far eastern waters, and the duplication of its machinery, together with the fact that the vessel has an inner bottom extending from end to end, will make it almost impossible to disable the vessel while at sea.

ENTIRE PACIFIC COAST IN FAVOR OF IN-CREASE IN OUR NAVY.

The San Francisco Chamber of Commerce is in favor of a good strong Navy that will enable this nation to maintain its position and make its reasonable demands on other countries respected.

As it has been reported in the daily press that the Secretary of the Navy has recommended, or is about to recommend, to Congress an appropriation to construct at once four battleships of the largest and most approved type, together with all other necessary auxiliary boats, the San Francisco Chamber of Commerce has most vigorously endorsed this naval program and has so informed the Secretary of the Navy and the California representatives in Congress.

The entire Pacific Coast is strongly of the opinion that the time has not come to economize in respect to the Navy, and that a strong Navy located in Pacific Coast waters, with all strategic points along the Pacific Coast line of the United States well fortified, garrisoned and mined, are necessary for the proper defense of the Pacific Coast, an important factor in the maintenance of peace.

TORPEDO BOAT DESTROYERS FOR THE U. S. NAVY DEPARTMENT.

Further to the information on this subject that appeared in our October issue, the following extracts from a letter written by the Assistant Secretary of the Navy Department, Franklin D. Roosevelt, and addressed to the "Pacific Marine Review" may be of some interest:

"Referring to the inquiry made in your letter to be advised of the names of the successful bidders for the construction of six torpedo boat destroyers Nos. 57-62 inclusive, I have to inform you that contracts for the construction of said vessels have recently been awarded as follows:

"One vessel, No. 60, to the Bath Iron Works, Limited, Bath, Maine, at \$884,000; to be completed in 24 months, and to have the speed of 30 knots an hour.

"One vessel, No. 57, to the Fore River Shipbuilding Corporation, Quincy, Mass., at \$861,000; to be completed in 24 months, and to have the speed of 29½ knots an hour

"Two vessels, Nos. 61 and 62, to the New York Shipbuilding Company, Camden, N. J., at \$825,000 each; to be completed within 24 months and to have a speed of 29½ knots.

"Two vessels, Nos. 58 and 59, to the William Cramp & Sons Ship and Engine Building Company, Philadelphia, Pa., at \$881,000 each; one to be completed within 23½

months, one within 24 months, and to have a speed of 291/2 knots each."

AUSTRIA INCREASES ESTIMATE FOR NAVY.

Austria's naval estimates, just made public, include \$45,000,000 for new battleships to be constructed or already building.

Besides four dreadnoughts already laid down, it is planned to build two superdreadnoughts at a cost of \$15,000,000 each.

The admiralty also contemplates two more super-dreadnoughts to be completed in 1917 at a cost of \$30,000,000.

FISHERY CRUISER FOR CANADIAN GOVERN-MENT.

The fishery cruiser "Malaspina," which has been built by the Dublin Dockyard Company, Ltd., to the order of the Canadian Government for service on the Pacinc Coast, recently ran her speed trials at Skelmorlie, and between Clock and Cumbrae lights, Firth of Clyde. The first day was occupied by the builders' trials, and on the second day the official trials took place, when, with the specified deadweight on board, the very high speed of 14.7 knots was obtained as a mean of six runs on the measured mile, and the revolutions corresponding to this speed were maintained during a six-hours' continuous trial at full speed. The guaranteed speed was comfortably exceeded, and the engines worked with the utmost smoothness throughout, there being a total absence of vibration. The "Malaspina" left on her voyage to Esquimalt, B. C., on the 8th of October.

This vessel has been built under the superintendence of Mr. R. L. Newman, of Canada, chief superintendent of construction to the Canadian Government, and his representative, Mr. F. L. Warren, of London.

CONTRACT FOR LIGHTHOUSE TENDER "ROSE" NOT YET AWARDED.

The proposed lighthouse tender "Rose," which is intended primarily for use in the shoal water ports on the coast of Oregon, where the water on the bar is not of sufficient depth to admit of the present lighthouse tenders crossing them without serious danger of accident, is to be a small vessel about 125 feet in length, 26 feet beam and 7 feet draft loaded. The vessel is to be constructed of steel, fitted with steel water-tight bulkheads. schooner rigged, with cargo boom on foremast, steam hoisting engine and steam windlass, combined steam and hand steering gear, and lighted by electricity. The propelling machinery is to be two triple-expansion, surface-condensing, steam engines of the vertical inverted type, driving twin screws. Steam is to be supplied to main engines and auxiliaries by two water-tube boilers fitted to burn crude oil as fuel. One condenser common to both main engines.

J. F. Duthie & Co., of Seattle, Wash., were the lowest bidders, but the Puget Sound Navy Yard submitted an estimate of cost of construction at that Navy

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Yard which was considerably lower than the amount of the lowest bid. The question as to whom the award will be made is still pending in Washington, D. C., so far as the office of the Lighthouse Inspector of the Seventeenth District has been advised.

ALASKA-PACIFIC STEAMSHIP COMPANY TO INCREASE FLEET.

We have received a wire from H. F. Alexander, President of the Alaska-Pacific Steamship Company confirming the report that this company has purchased the two ships "Admiral Dewey" and "Admiral Schley," sisterships to the "Admiral Sampson" and "Admiral Farragut" now operated by this company.

Mr. C. W. Wiley, manager of the Alaska-Pacific Steamship Company, is now in Philadelphia arranging for the alterations that will be necessary to fit these vessels for service on this Coast.

The "Admiral Dewey" and "Admiral Schley" are to be operated in the Seattle-Los Angeles service of the Alaska-Pacific Steamship Company in conjunction with the steamers "Admiral Farragut" and "Admiral Sampson." It is planned to bring these two vessels to this Coast via the Panama Canal. These vessels should prove a very valuable addition to the Alaska-Pacific Steamship Company's fleet.

THE TWO SHIPS FOR THE SPOKANE, PORTLAND AND SEATTLE RAILWAY COMPANY.

It has been generally known for some time past that two ships are building at the yards of the Cramp Shipbuilding Company at Philadelphia for service between Portland and San Francisco. As the owners of these vessels, the Hill interests, do not wish the description of same made public at this time, we are waiting the receipt of a full and accurate announcement from the company concerning the details of their ships, and at which time this information will appear in the "Pacific Marine Review."

REPORT DENIED.

Although it has been reported that the Standard Oil Company are building a million-dollar oil tanker at the yards of the Newport News Shipbuilding and Drydock Company, we are informed in a letter received from J. C. Rohlfs, manager of the Marine Department of the Standard Oil Company, that this report is incorrect. The Standard Oil Company is not building any vessels on the east coast at the present time.

NEW VESSELS FOR THE KOSMOS LINE.

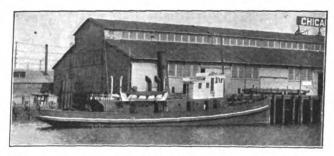
By the time the Panama Canal is open to traffic, there will have been added to the fleet of the Kosmos Line thirteen new steamers varying from 12,000 to 14,000 tons d. w. capacity. Some of these steamers have recently been placed in this company's regular service and with very satisfactory results.

The Kosmos Line intends maintaining the trade routes they are at present operating to the West Coast of South, Central and North America and to take care of any further possibilities offering in connection with the new route.

TUG "MILWAUKEE" BUILT FOR MILWAUKEE TERMINAL RAILWAY COMPANY.

The Seattle Construction & Drydock Company recently delivered the tug "Milwaukee" to her owners. The "Milwaukee" is a single screw steel tug boat of the following dimensions: Length over all, 117 feet 6 inches; length between perpendiculars, 110 feet; breadth, molded, 22 feet 6 inches; depth, molded, 15 feet.

The vessel is equipped with a vertical, inverted, direct acting, three cylinder triple expansion engine of 800 h. p.,



and a single ended Scotch marine boiler. The furnaces are fitted for burning, oil with natural draft. The quarters for the crew are located forward and are accessible from the house on deck, so in case of rough weather the members of the crew are not compelled to go out on deck to go to their quarters. The officers' quarters are located on the lower deck aft and are accessible from the engine-room.

The "Milwaukee" is also equipped with a steam towing machine, steam capstan aft for handling lines, steam steering gear, search light, two large cast iron towing bits, one aft and one forward on the center line of the deck, and electric lighting plant. The vessel is heated throughout with steam heat.

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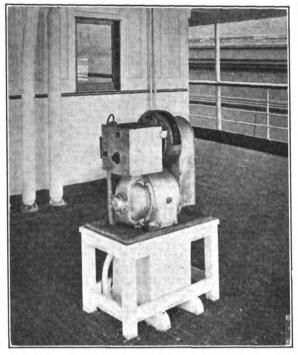
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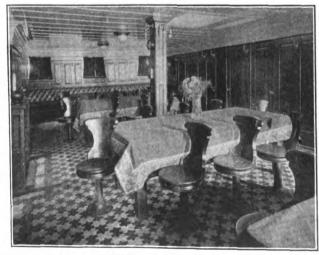
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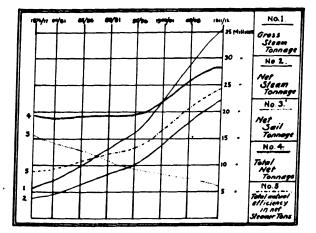
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FACTORS IN THE DEVELOPMENT THE WORLD'S MERCHANT MARINE.

The accompanying diagram is an illustration of the development in the World's Merchant Marine during the last 35 years and at the same time of the decrease in sail tonnage, which started at the commencement of that

The following remarks will serve to explain the meaning of the curves in the diagram:



- 1 and 2: Steam tonnage has steadily increased since the "Savannah" crossed the ocean in 1819, although this increase was very slight at first, owing to the novelty and imperfection, as well as to the slight economic advantages of the new type of vessel. It was not until the introduction of iron into shipbuilding and the resultant technical progress in this direction, as well as in that of engine design, that both the tonnage and the number of seagoing steamers materially increased, so that in the first half of the 90's, the gross steam tonnage reached the highest point that had been attained by sailing ships in 1876-77. Since that time a very rapid increase in steam tonnage has been evident, and this increase in the tonnage of self-propelled vessels will continue in like ratio for a considerable time to come, irrespective of whether steam or oil furnishes the propelling power.
- 3: Sail tonnage, the early development of which is somewhat obscure, commenced to increase rapidly at the beginning of the nineteenth century, due to the general cultural development prevalent towards the end of the eighteenth century and also to the increased traffic requirements caused thereby, reaching, as previously mentioned, its climax in 1876-77. From that time a gradual steady decline set in, which still prevails, notwithstanding the cheapness of operation, and which, in fact, appears to be irresistible, unless engineering science should succeed in obtaining still further economical advantages by means of the use of the internal combustion engine as an auxiliary in large sailing vessels for the handling of cargo, running rigging, anchors, etc., as well as for propelling the vessel in calms.
 - 4: The total net tonnage of the World's Merchant

Marine has practically kept the same level for 20 years, since reaching the nineteen million mark in 1876-77. This peculiar fact, which does not seem to be borne out by the steady development of the world's commerce during this period, is readily explained by examining the actual composition of the tonnage, and, observed from that standpoint, immediately ceases to indicate any standstill in development. The importance of this factor is generally overlooked. In fact, in 1876-77 a marked rise really did commence also in the total tonnage, which has continued up to the present day and which, with the constant opening of new trade districts and routes, resulting in the general advance and expansion of civilization, is bound to continue in future.

5: Under the general assumption, proved by experience, that a steamer can make three times the number of voyages and, therefore, can handle three times as much cargo as a sailing ship in an equal space of time, it is obvious that the efficiency of the World's Merchant Marine cannot be expressed by its total tonnage. Now, this particular curve shows the efficiency of the world's tonnage, which was computed by allowing only one-third of each sailer ton to make one ton of steamer efficiency. This actually available carrying capacity, however, is dependent to a much greater extent on the growth of steam tonnage than on that of sail tonnage, and its steady increase is in absolute accord with the widening of the world's commerce and traffic.

From the foregoing, it is clearly seen how misleading mere statistics of register tonnage of the World's Merchant Marine must necessarily be.

DREDGE "OLYMPIA" LAUNCHED AT SEATTLE.

The dredge "Olympia" which is 153 feet in length, and built by the Puget Sound Bridge and Dredging Company at a cost of \$150,000, was launched during the month of October at the East Waterway, Seattle.

The "Olympia" slid 115 feet down greased skids and then dropped a sheer five feet from supporting blocks. This is said to be the first broadside launching ever attempted on this Coast.

When completed the "Olympia" will be employed in making the excavation for the municipal docks at Smith The Puget Sound Bridge and Dredging Company now has a fleet of seven powerful dredges.

The "Olympia" is one of the largest hulls of her type on the Coast, being 153 feet long, 40 feet beam and 12 feet deep. She will be equipped with steam engines of 1,000 horse-power. Her boilers are a new type on this Coast known as the Pennsylvania return tubular boilers. She is a twenty-inch suction dredge.

The Osaka Shosen Kaisha advises through Edwin Orrett, its local manager at Tacoma, that this company is now having built in Japan three additional steamers for use on its American line. These steamers will have a gross tonnage of 9.500 tons each and a sea speed of 17 knots.



TECHNICAL ADVICE.

The value of competent technical advice to an owner contemplating building new ships can not be more forcibly brought out than in the case of officers and crew accommodations. With the ever increasing demands of the sailor for better working conditions, food and quarters it becomes a necessity for the shipowner to employ technical aid to work out all the details and assure the owner that in new construction he obtains all that he is paying for, and in cases where a choice of two arrangements is presented that he gets the one which will result in an advantage to his particular case. Most shipowners employ technical aids, and we can only advise that such aids be selected from among men who have had considerable experience in the design and laying out of officers' and crews' quarters, the development of structural work to obtain the maximum strength with minimum of material, the design of ventilation systems, pumping and sanitary systems.

As is stated in a recent issue of "Shipping Illustrated," it is an axiom of ship construction that bad and ill-ventilated quarters cost not one whit less to erect than plain but comfortable ones, so designed as to attract the better class of seafarers. In many cases, officers will prefer the average rate of pay with cleanly conditions of life at sea to higher wages in badly arranged ships, although the general rule is that owners whose ships are welldesigned at the start are also those who generally contrive to show more liberality, as a result of greater earning power. One of the crying evils of the age is compelling two officers to occupy the same room, even in large cargo ships with plenty of exempted space to spare, when the extra accommodation for a third officer would cost less than one hundred dollars to erect. It is idle to herd men together in such a way as to disgust them with their surroundings and then expect them to take personal interest in their work.

Owners are often unjustly accused of undue parsimony in the matter of living accommodations when, as a matter of fact, their only fault lies in having trusted blindly to the builders' promise to turn a modern ship, without having anyone on their side competent to obtain from the builders the best that can be had within the amount available for con-The fact is scarcely credible to the unstruction. initiated, yet, new vessels of very large capacity, fitted in respect of cargo-handling and machinery with the latest and best appliances, are often provided with living quarters for officers and crew designed and located in defiance of the most elementary principles of domestic hygiene. It is such conditions of life at sea which are responsible for the propagation of pulmonary tuberculosis and other diseases so painfully frequent nowadays among seamen. Ventilation, lighting and sanitary arrangements often leave much to be desired even in the passenger accommodations of pretentious liners costing millions of dollars and it is obvious that the time has arrived for the technical societies of shipbuilders and naval constructors to take up in earnest the discussion of problems pertaining to such important subsidiary details of ship construction as the heating and ventilation of ships, the lighting of crew spaces and of passenger quarters, the storage of food, the disposal of dirt and waste, etc. Such questions are discussed privately during the preparation of designs and specifications, and papers pertaining to them would certainly prove of greater value than the oral exploitation of mechanical fads which take up so much of the time at meetings of societies of shipbuilders and engineers.

SMOKE CONSUMER PATENTED.

Captain C. W. Lent, of Stockton, Calif., has invented and patented what is termed "a perfect smoke consumer."

The outfit consists of two tanks three feet long and seventeen inches wide, and a boiler, with a ten-inch smoke stack connected. This smoke stack is called a pass-over, because it does not lead into the atmosphere. There is an intermingler with tube connections and a reservoir of water. The outfit requires no smoke stack, doing away altogether with the skyscraper chimneys such as are now to be seen around every manufacturing establishment.

Instead of going through the smoke stack, the smoke is in some manner brought to the intermingler and then passes through the tubes into the reservoir, the result being a quantity of lamp black.

The success of Captain Lent's invention has aroused considerable interest in Pittsburg and all arrangements have been made for a demonstration during the first part of November.

This smoke consumer has not yet been experimented with aboard a ship, but it is thought that with a few changes it could be successfully adopted.

AIDS TO NAVIGATION IN B. C. WATERS.

Col. Wm. P. Anderson, Chief Engineer of the Dept. of Marine & Fisheries at Ottawa, informs us that a submarine bell has recently been installed and is now in operation on Sandheads lightship.

Two or three more such bells attached to buoys will be established in British Columbia waters just as soon as the buoys are delivered to the Department. The system will be extended as the demand increases, provided enough ships equip themselves with receiving apparatus to make the installations worth while.

Col. Anderson states that the submarine bell on the Atlantic Coast has proved itself to be a very efficient and satisfactory signal, but the Department of Marine & Fisheries finds that it is only satisfactory where they can remove the bells from the water on short notice for overhauling, in the event of anything going wrong with the mechanism.

NEW FOG ALARM FOR DISCOVERY ISLAND.

A contract for the construction of a new fog alarm building on Discovery Island, British Columbia, has been awarded to Mr. W. H. Rourke, of Shaughnessy Heights, for the sum of \$2,950. The building will be of wood, with accommodation for the new machinery, fuel, etc. The new fog alarm will be a diaphone supplied with air at a pressure of 25 lbs. through a three-inch pipe. The air will be compressed with oil engines, and the whole plant will be in duplicate, to prevent any risk of interruption from breakdowns.

These three-inch diaphones are considered to be the best fog alarms in the market, as they can be heard farther than any whistle or siren. The evidence of sailors on this coast bears out this claim.

WIND SAILS FOR ENGINE ROOM.

The installation of a wind sail down through the forward end of the engine-room skylight of the tender "Orchid" has reduced the temperature of the atmosphere in the upper engine-room 50 degrees under normal conditions



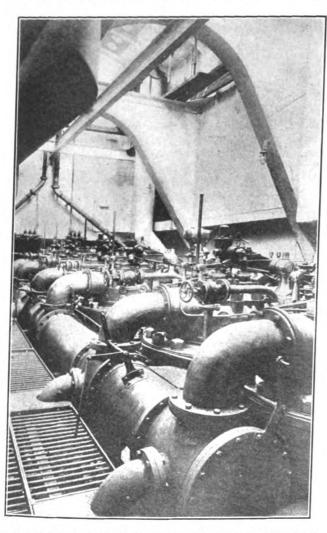
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MOTORTANKSHIP "WOTAN"

The Diesel motortankship "Wotan," built by Reiherstieg-Schiffswerfte und Maschinenfabrik of Hamburg, fitted with a 6-cylinder, 2-cycle Carels-Reiherstieg-Diesel engine, owned by the German-American Petroleum Gesellschaft, made its maiden trip across the Atlantic Ocean, arriving in New York port from Hamburg on the 3d of October.

The last European stop was Southampton to put off some visitors that sailed on the ship from Hamburg.

The trip was made from Southampton to New York in fifteen and one-half days, with an average speed of 8.1 knots, the engine turning at 79 r. p. m. developing 2250 I. H. P., with a daily fuel consumption of 7 tons



BACK VIEW SHOWING SCAVENGING, CIRCULATING AND FUEL PUMPS ON ENGINE.

of oil, or 131 grammes per I. H. P. hour. This fuel consumption covered the main engine, steering engine and lighting set.

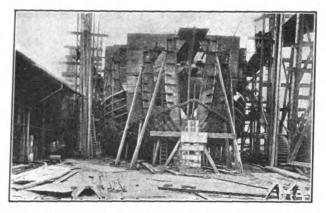
Not a stop was made from Southampton until New York Harbor, where they took on the pilot.

A thorough investigation or overhauling of the engine does not disclose a single discrepancy or necessity of repair of any nature whatever.

This is considered a remarkable feat, in lieu of the engine and ship being on its maiden trip.

The ship took on its cargo and sailed from New York on the 9th inst. for the home port at Hamburg.

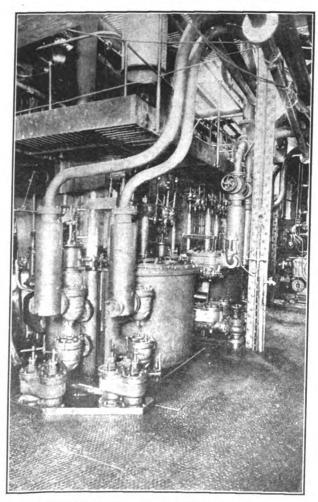
While in New York Harbor this ship was visited by a great many representative naval and mechanical engineers, as well as representatives of large manufacturing and financial interests, and without an exception



MOTORSHIP "WOTAN," BUILT ON ISHERWOOD SYSTEM OF CONSTRUCTION.

they all have only words of praise for the type of engine installation made on this ship.

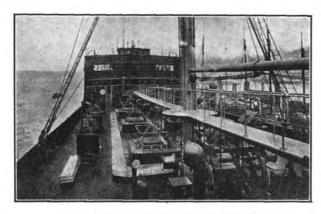
This engine is the open-frame Carels two-cycle reversible marine Diesel engine. The main propelling engine has fitted on it the bilge pump, circulating water pump, oil pumps and steering compressor, so that in itself it is a complete propelling engine plant. The auxiliary pumps were not fired from time of leaving the European port until reaching New York, as the



ANOTHER VIEW OF THE ENGINE-ROOM.

ship was steered by air from the steering compressor on the engine.

An item of interest is to compare the volume of fuel consumed in this ship with that of a steamship of equivalent capacity, as the owners of this ship are

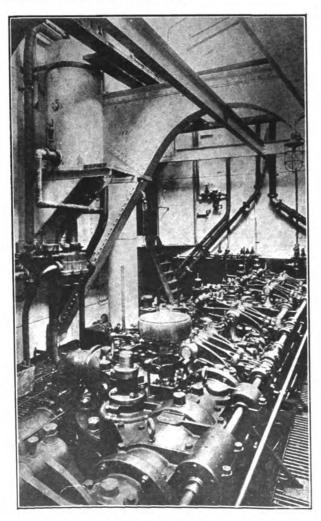


STERN VIEW-MOTORSHIP "WOTAN."

operating a line of steamships of the same capacity, and it is demonstrated that the cargo of fuel for the same radius of operation would be at least four times as great, in a great many cases five times, in a steam engine than in a Diesel engine.

The fuel bunkers on this ship provided for 900 tons of oil and would permit the ship to travel 30,000 miles without taking on an additional cargo of fuel.

The dimensions of the ship are (Isherwood system): Length, 404 feet; beam, 52 feet 3 inches; depth, 29 feet 6 inches; with a draft of 23 feet.



WORKING CYLINDERS, SHOWING CAMS AND VALVES.

When loaded she carries 6780 tons of oil, in addition to carrying 900 tons of bunker oil and 100 tons of water.

A great item of interest in this ship is that it is a single screw ship, 6 cylinder installation, in which the engine is complete and self-contained, including the steering compressor while the other motorships in service, such as the "Hagen" (Krupp Engs.), "Christian X" (Burmester & Wain, 4 cycle), etc., have in addition to two propelling engines of 6 or 8 cylinders, 3 or 4 cylinder auxiliary engines to develop the injection air for the operation of the main engines.

It is said that the engineers who inspected the "Wotan" have, without exception, praised this type of engine as compared with the Monte Penedo, which is fitted with port scavenging Sulzer engines.

NEW BOLINDERS' ENGINED VESSELS.

There has just been completed in Belgium a smart Bolinders' engined cargo vessel of some 78 ft. 6 in. in length, named "Pioneer," which has been built for owners in Marseilles. She has a displacement of 160 tons, and a deadweight carrying capacity of 72 tons. The propelling machinery consists of a 240 b. h. p. Bolinders' direct reversible motor, consuming residue oil, and developing its power at 275-300 r. p. m. On trials held recently a speed of 11.8 knots was attained. The vessel carrier 26 tons of fuel oil, which gives a radius of 4,800 sea miles. At 10 knots, which is a good speed, the consumption worked out at about 141/2 gallons per hour. The complete machinery, including auxiliaries, it should be mentioned, is arranged in an engine-room 21 ft. 6 in. in length.

At Messrs. John Cran and Co.'s yard, Leith, the new 80 b. h. p. Bolinders' engined motor "Lindores" is being got ready for trials, while a sister ship, building in same yard, is all but ready for launching. Both vessels are for service in Brazil, and will make the passage out under their own power. Messrs. Hawthorn and Co., another Leith firm, are making good progress with the two twin-screw 240 b. h. p. Bolinders' engined coasters they are building for Messrs. Elder Dempster and Co., Ltd., London.

DIESEL ENGINE FOR SERVICE IN PUGET SOUND WATERS.

The first 100 h. p. marine Diesel engine to be built in America will shortly be installed in a passenger boat operating on a daily run on Puget Sound. This Niseco heavy oil engine (true Diesel type) was built by the New London Ship & Engine Company, whose Pacific Coast branch is located at Seattle. The engine is a 4cycle, 4-cylinder, with the usual clutch and gear, and was designed for Pacific Coast conditions. It is admirably suited for tugs, halibut schooners, cannery tenders, yachts and comparatively small passenger and freight vessels.

The design, construction and operation of this new type of engine is extremely simple, so simple, in fact, that this first engine was set up in the shop by a gasoline engine man who had never before seen a Diesel engine. The entire test stand trials and the present endurance test have and are being conducted by this man. The engine is being used to furnish power for operating machine tools in the shop, the load varying from 50 to 120 h. p., and has given complete satisfaction. The combustion is perfect, the exhaust clear, full power is developed, and the consumption of fuel oil is only .48 lbs. per h. p. hour.

The company will also build this engine in 6-cylinders, giving an engine of 150-175 h. p.

SUGGEST THAT U. S. TRANSPORTS BE CONVERTED INTO OIL BURNERS

The arguments made by the Foreign Trade Department of the San Francisco Chamber of Commerce that the U. S. Government transports be converted into oil burners are most convincing and should be of considerable interest to many of our readers.

On October 16th the Foreign Trade Department informed us that they had not received a reply to their letter addressed to the Chief, Quartermaster Corps, U. S. Army Dept., but we have no doubt whatever that their letter is receiving the Army Department's best attention. It is hoped that the Foreign Trade Department's suggestions will be followed in this matter as they are practical and will be, if adopted, of considerable benefit to the American people.

The letter above referred to is as follows:

"The Foreign Trade Department of the San Francisco Chamber of Commerce begs to thank you for your favor of September fourth with respect to converting the United States Army transports into oil burners.

"The department appreciates the fact that, at first glance, the expenditure of \$125,000.00 per ship, 'simply for a change in fuel arrangements' might appear unwarranted, however, on going carefully into this subject and analyzing it, the facts not only seem to warrant the expenditure, but seem to leave no other alternative from a good business point of view. The Department begs to suggest that it would not be necessary to convert all of these transports into oil burners, simply the largest and most modern and only one might be so converted at first to supply the Island of Guam with sufficient transportation service to commence with.

"First, allow us to point out the saving to the Government by such conversion taking one ship as a basis.

"A transport, as we are informed, usually makes four round trips a year and the average coal consumption per trip would be approximately 4500 tons or 18,000 tons per annum. We feel sure the Government cannot buy good coal for less than \$3.50 per ton, which would amount to for the year an expenditure of.....\$63,000.00

"The equivalent in oil (3.5 bbls, per ton) at 80c per bbl. would represent...... 50,000.00

a saving of.....\$13,000.00 in fuel alone.

"By burning oil, a saving could be made in help, not taking into account their maintenance, as follows:

6 Firemen @ \$45.00 per month......\$3,240.00

9 Passers @ \$35.00 per month...... 3,780.00

a total of.....\$ 7,020.00

"On a round trip such as the transports make, coal would shrink fully 5%, which on a cost of \$63,000.00 would represent......\$ 3,150.00

a Grand Total of......\$23,170.00

equal to 18.5% of the cost of making the change, a very fair investment and one which would pay for itself in a very few years. In addition to this a very material saving would be made in the life of the boilers.

"Second, during a year the exports from Guam would reach, as we are informed by reliable authorities, six to seven thousand tons, which at commercial rates of freight would produce a revenue of not less than \$40,000.00 per annum, making a grand total by saving and with revenue of \$63,170.00 or over 50% of the cost.

"If this was done, it would distribute annually \$50,000.00 among American producers of an American product and save \$63,000.00 of American money being paid to a foreign country from which the American people receive no benefit whatever. Multiply this by four (for the four large transports) and we have \$200,000.00 of the American people's money spent on an American industry and \$252,000.00 of American money kept at home.

"The United States Government today, through its Department of Commerce, is doing a wonderful work in endeavoring to increase the sale of American products abroad. Would it not appear entirely consistent for the War Department to set a good example where it would not only cost the Government nothing, but effect a considerable saving?

"Third, as to the age of the transports, we find as follows:

"The Sherman is 20 years old.

"The Sheridan is 21 years old.

"The Logan is 21 years old.

"The Thomas is 19 years old.

"The Dix is 21 years old.

"These ships having been kept in excellent condition cannot be considered old and can reasonably expect many years of service and this service would be materially increased if they were converted into oil burners.

"We notice the cable ship 'Burnside,' which is 31 years old, has just been converted into an oil burner, yet she is ten years older than any of the transports named above.

"Fourth, in the event of war, the coaling stations in the Orient would be closed to the United States and it would be very convenient to be able to take fuel at a home port for the round trip and while coal could be taken here, by using oil it would allow considerably more space for cargo, besides which the Government is now building a number of tank fuel carriers, whereas their These transcolliers are unfortunately very scarce. ports could take oil at either Panama or Honolulu or both, thereby giving them a wide sailing range.

"Further, as to the age of the transports, the Department is reliably informed that the Pacific Mail Steamship Company is converting their transpacific ships into oil burners and some of them are nearly as old as the transports. In addition, the Pacific Coast Company, notwithstanding the fact it is, largely engaged in the mining and selling of coal itself, is actually converting some of its principal ships into oil burners, which is pretty good evidence in favor of this class of fuel.

"Again, in the event of war, an oil burning ship can make much better time than one burning a poor quality of coal and this saving in time might be the means of saving the ship from capture by a foreign power and the consequent loss of life or liberty of American officers and men to say nothing of the financial loss.

"The Foreign Trade Department earnestly suggests that this matter be gone into further and that, if necessary, a commission be appointed to look into it and verify the statements herein made."

I fully agree with what you say in that no American ships operating in the foreign trade will pass through the Panama Canal when it is opened in 1915 and that heroic efforts should be taken to relieve this Government of the plight at which we have arrived in relation to American ships upon the high seas.

I am much interested in this subject and have been since my return to Congress as well as before. Anything that I can do to relieve the situation will be readily and willingly done.

(Signed) JOHN E. RAKER.

(Signed) JOHN E. RAKER, Member of Congress,



THE PORT OF SAN FRANCISCO

By LEO. V. MERLE, Jr., Secretary Board of State Harbor Commissioners.

The harbor of San Francisco through the opening of the Panama Canal is destined to become one of the greatest in commercial importance in the world and tangible proof pointing to that conclusion is already in evidence. Many foreign steamship companies and Eastern steamship companies have signified their intention of sending their vessels to this port and others are sure to follow their example. It is not difficult to comprehend why San Francisco should be selected by these companies. It has a perfect natural harbor of great magnitude, close to the sea; a hinterland which embraces the heart of California's agricultural and mineral producing regions-one of the richest in the world; it is on the line of the great routes north and south and in direct rail connection with all the region to the eastward; it has a commerce and development half a century old. With the immense force of customs and established lines of trade in its favor; it is the most centrally located of all the ports of commerce of the Pacific and has important naval and military bases.

Three factors determine the commercial supremacy of a city by the sea. First, its potential tributary commerce; second, the size and accessibility of its harbor, and third, the development of its docks to meet the requirements and accelerate the increase of its commerce. Of the three, the volume of commerce, actual and potential is fundamental. Good harbors on barren coasts do not make great seaports, but where a tributary interior territory exists, rich in agricultural and mineral possibilities, and capable of supporting a large population, it is sufficient to transform shallow inlets into deep and commodious harbors at the points where the lines of intercourse of its maritime and interior trade converge. Where the hinterland is rich in resources, and a natural harbor already exists, capable of receiving the commerce of the world, it is evident that the acceleration of the growth of the port will depend upon the remaining of the three factors-that is, the development of its docks.

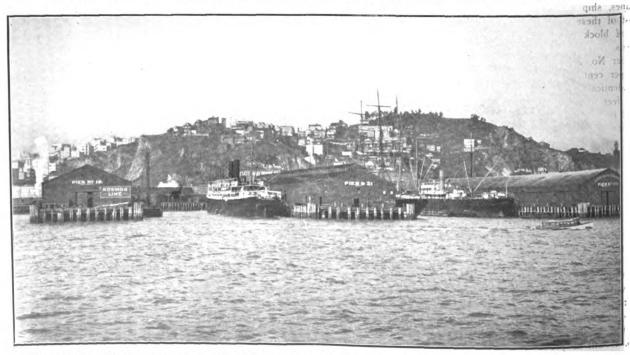
This potent fact has been fully recognized by the present Board of Harbor Commissioners consisting of

J. J. Dwyer, president; Thomas S. Williams and J. H. McCallum and to their everlasting credit it can be truthfully said that they have displayed and are displaying an energy and zeal in meeting the urgent requirements in the shape of dock facilities necessitated by the increased commerce that will eventuate through the opening of the Canal that could not be excelled. When they took office they found that their predecessors had done little in the way of providing wharf accommoda-

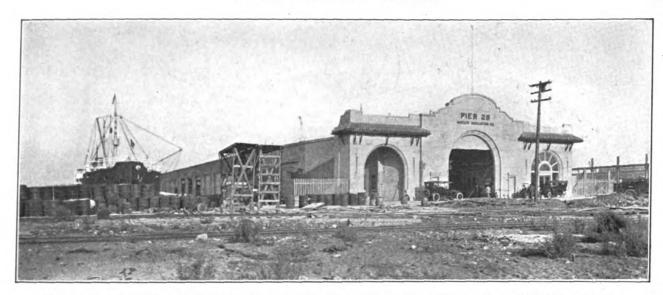


WATERFRONT, LOOKING SOUTH FROM FEPRY TOWER, SHOWING CONSTRUCTION OF SECTION 9-A OF THE SEAWALL.

tion for the increased commerce but on the contrary had left them with many of the existing wharves in a rotten and almost worthless condition. They were confronted with a state of affairs that would have daunted most men but with characteristic energy they set to work early in the year 1911 to construct extensive new docks of the most modern type, equipped with a commendative system of electric traveling cranes and other details vices for the speedy and economical handling of freights and bulk cargo. What they have already accomplished and what they propose to do before the opening of the speedy and what they propose to do before the opening of the speedy and what they propose to do before the opening of the speedy and what they propose to do before the opening of the speedy and what they propose to do before the opening of the speedy and what they propose to do before the opening of the speedy and what they propose to do before the opening of the speedy and speed the speedy and speed the speedy and speed the speed to the speedy and speed the speedy and speed the speed to the spe



VIEW TAKEN FROM THE BAY SHOWING OCEANIC STEAMSHIP COMPANY'S SS. "SIERRA" JUST BEFORE SAILING.



Pier No. 28-Completed September 4, 1913. Contract Price, \$358,400. Occupied by Matson Navigation Company.

Canal, if funds are available, may be briefly summarized as follows:

Pier No. 17 at the foot of Union street has been constructed at a total cost of \$286,000. It is 800 feet long by 126 feet wide and is equipped with a railroad track on the north side which enables ships to load direct into cars. The pier is constructed on wooden piles protected by concrete cylinders, steel I beams caps protected by concrete and a wooden deck. The shed is also constructed of wood.

Pier No. 28, at the foot of Bryant street, has also been completed. It is 150 feet wide by 676 feet long and has cost \$460,000. It is constructed on reinforced concrete cylinders, having a reinforced concrete deck and shed.

Piers Nos. 30 and 32, at the foot of Brannan and Bryant streets, are 95 per cent. completed. They are connected by a wharf 220 feet by 200 feet. The outside berths on these piers will average 750 feet, the inside berths 550 feet. They are 200 feet wide. Both are constructed on reinforced concrete cylinders on hard bottom, with coincrete beams and deck. The sheds will be of timber towith steel outer columns, tracks for electric cranes, ship towers and telphers. The total estimated cost of these piers is \$1,232,000, which includes cement, wood block pavement and steel rolling doors for the sheds.

Pier No. 26, between Bryant and Harrison streets is 90 per cent. completed. The construction of this pier is identical with that of Piers Nos. 30 and 32. It is 200 feet wide by 765 feet long and the total estimated cost is \$608,000.

Pier No. 39 at the northern end of the waterfront is 25 per cent, completed. It will be 140 feet wide by 908 feet long and will be equipped with two spur tracks, and it is the intention of the Board to use it for freight service. Its estimated cost is \$500,000.

Plans and specifications have either been completed or are under way for Pier No. 35 between Kearny and Montgomery streets; Pier No. 37, foot of Kearny street; Pier No. 41, foot of Stockton street; Pier No. 46, just north of the entrance to Channel street inlet; Pier No. 33, at the foot of Bay street; Pier No. 29 at the foot of Chestnut street, and Piers Nos. 16 and 18, between Howard and Folsom streets. Pier No. 35 will be 200 feet wide by 975 feet long. It will be equipped with two spur tracks and used for freight service. Pier No. 37 will be similar in construction to Pier No. 35. Pier No. 41 will be probably used for the accommodation of river steamers. It will be equipped with two spur tracks,

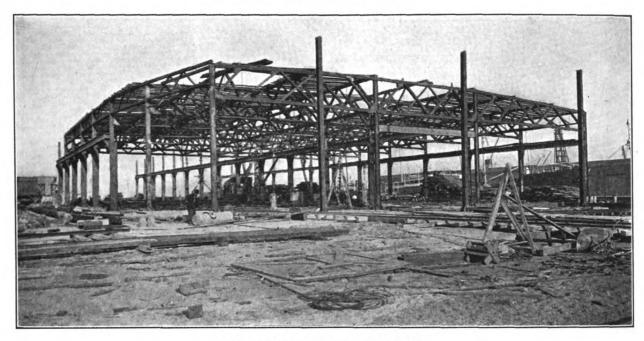
but will have no shed. Pier No. 46 will be 200 feet wide by 800 feet long. Pier No. 33 is to be equipped with a shed to take the place of the grain sheds now on the bulkhead from Francisco street to Kearny street.

The grain shed in its present location will be kept in operation as long as possible and arrangements will be made to care for the business now handled at this point under cover, until the Pier is completed. Pier No. 29 will be 140 feet wide by 800 feet long and will be equipped with two spur tracks and used for passenger service. Piers Nos. 16 and 18 will be each 140 feet wide by 605 feet long. These new piers will increase the existing wharf area to the extent of about 112 per cent. A new feature has been introduced in the construction of these new piers by inclining them at an angle to the seawall. The United States Government has placed the pier-head line at a distance of 800 feet from the seawall beyond which pier construction is prohibited. The effect of inclining the piers at an oblique angle to the seawall will be to permit of piers ten and eleven 'hundred feet long, needed for the accommodation of mammoth ocean liners, and also, it is believed, by a fan-shaped arrangement of the ends will make navigation on this long curve of the harbor line easier and safer.

The construction of four additional piers to project from the seawall along the China Basin lease to the Santa Fe Railroad Company is also contemplated by the Board. Under the terms of that lease whenever a continuous seawall is constructed from the Ferry Building at the foot of Market street to Channel street the State becomes entitled as a right of way and thoroughfare to a strip 100 feet wide along the bay front of the



VIEW OF WATERFRONT LOOKING NORTH FROM FERRY TOWER.



Erecting Steel Shed Frame on Pier No. 32.

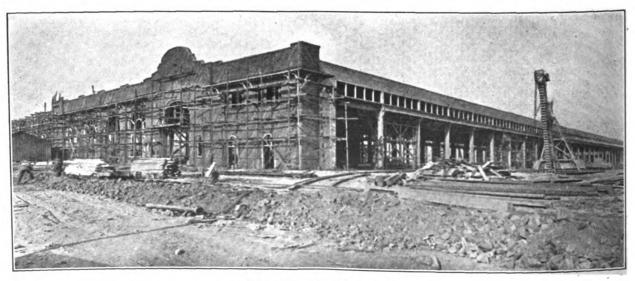
China Basin leasehold, and to other incidents, and only on the completion of such continuous seawall is the Board authorized to construct piers from this portion of the shore line. Contracts have been let for the construction of two sections of the seawall to be known as sections 9 "A" and 9 "B," totaling 1760 feet and the work is 5 per cent. completed. The total estimated cost is \$544,000. When this work is completed there will be a continuous seawall from the Ferry Building to Channel street and the Board will be in a position to avail itself of its rights to the China Basin waterfront and call for bids for the four additional piers.

The Board also contemplates erecting new piers of a modern character as soon as practicable to replace the wholly wooden piers known as Nos. 5, 6, 8, 11, 14, 15 and 16. These piers are rapidly falling to pieces, due to age and the action of the teredo and limnoria, very destructive marine borers, but they must be kept in commission and necessary repairs made in order to serve the present and ever increasing demands of commerce until some of the additional new piers are built when they will be successively eliminated.

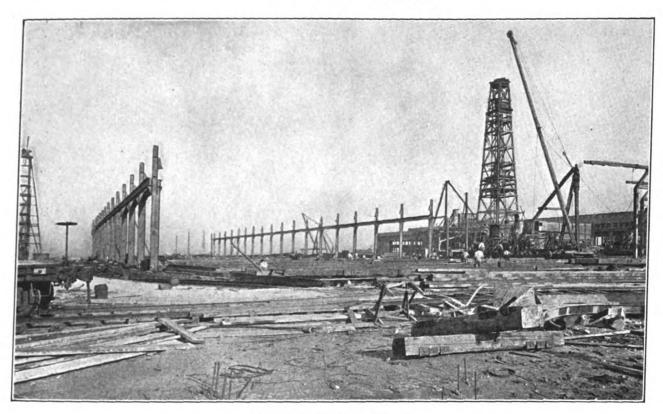
Three of the existing wharves Nos. 9, 11 and 12 have been widened by the Board and the Belt Railroad runs on to them with most gratifying results to the users of the wharves and a great increase in business to the port.

Plans and specifications have been completed for an additional width of 10 feet to Pier No. 54 at the foot of Fourth street in order to get deep water. A legacy left by the Board's predecessors was a ledge of rock close to this pier, which should have been blasted before the pier was constructed about three years ago. Blasting operations have been carried on by the present Board but had to be stopped to prevent endangering the pier and hence the increased width.

In the construction of the new piers the Board has inaugurated a radical departure in compliance with the insistent demand of the larger shipping interests by making most of them 200 feet wide. A few of the wharves constructed in recent years were made 140 feet wide. The older ones were mostly from 80 to 100 feet in width. Piers 200 feet wide will permit of operating the wharves with steamers on both sides simultaneously, an advantage impossible on narrower piers, where the large cargoes of one modern steamer would take up all the space. Increased width thus results in economy of water-slip space between the piers. It has



Shed Construction of Pier 32.



Pier No. 30-Looking Southeast.

also been decided to make all the water-slip spaces between piers much wider than formerly from about 225 to 250 feet, in order to accommodate the larger modern vessels and facilitate safety and ease of navigation and keep both sides of all the piers busy simultaneously.

The construction of Piers Nos. 29, 31, and 33 will necessitate the removal of the car-ferry slips at Lombard street but plans and specifications have been adopted for two new car-ferry slips between Powell and Taylor streets to take the place of those at Lombard street.

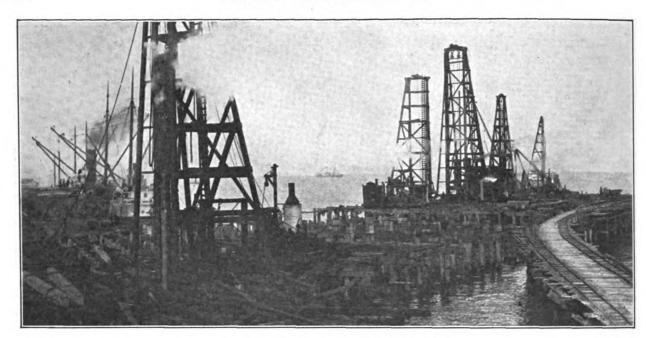
Owing to the enormous increase of transbay passenger traffic in recent years it has been found that the present seven ferryboat slips at the foot of Market street are inadequate to meet the demand put upon them. Consequently plans and specifications have been completed and adopted for five new ferry slips, three to the south, and two to the north of the present system and contracts for the work will be let shortly. Slip No. 7 will be rebuilt and put on a line with the others. To serve the increased ferry traffic and the new proposed slips wings to the north and to the south ends of the present Ferry Building at the foot of Market street have been projected and are now being planned. Such wings were on the original design of the building when erected some years ago, but were omitted because the funds available were then insufficient. The wings will follow the lines of the present structure and be of the same material, Colusa sandstone. Two of the existing wooden piers, No. 3 at the foot of Clay street and No. 4 at the foot of Mission street will be pulled out to make room for the projected new passenger ferryboat slips. It is also contemplated to construct a viaduct leading from the second story of the Ferry building and branching to the sidewalks on the east side of Market street. This will go far to relieve the congestion on the ground floor and to insure greater safety for pedestrians.

Another important improvement made by the Board has been the connection of the southern and northern divisions of the Belt Railroad, thereby obviating the

laborious and costly system previously in vogue of carrying cars from the one division to the other on a freight ferryboat operated by the Southern Pacific Company at a cost of from \$11 to \$15 per car. The saving to shippers by this joining together of the divisions will, it is estimated, amount to at least \$300,000 during the first year of operation and will grow proportionately with the increase of commerce. The formal opening of the connected line took place on March 29th last when the members of the State Legislature and their ladies were present as the guests of the Board. It is also proposed to construct a tunnel under the Fort Mason military reservation through which the Belt Railroad will be operated to serve the United States transport docks and the military reservation and, incidentally, the Exposition grounds. Plans and specifications for this work have been completed. The length of this extension will be one and one-eighth miles of which 1400 lineal feet is on trestle and 1600 lineal feet in concrete lined tunnel under the Fort Mason reservation. Plans and specifications have also been adopted for a reinforced concrete engine house and shops for the Belt Railroad locomotives.

Still another important act of the Board has to be chronicled which goes to show the strict business principles that have guided them in dealing with the interests of the State. Being of the opinion that the rentals paid by occupants and tenants of the Union Depot and Ferry building, especially the railroad, ferry and express companies, were too low, the Board appointed a commission of real estate men to appraise the values and fix the rents. The result was that the increase under the new schedule of rents was, in round numbers, \$137,000 per annum. The Board was consequently enabled to embark upon an extensive and very necessary campaign of repairs to the many dilapidated wharves and for the extension and improvement of the Belt Railroad and the purchase of additional equip-

Numerous other improvements made by the Board could be enumerated such as in the electrical depart-



Pier No. 39-25% complete. Contract Price, \$436,400.00

ment and other departments, and also in having all the repair work done by the Board's force, instead of by contract, which is more satisfactory and economical but it is needless to go into details. Suffice to say that one of the acts of the Board has given more satisfaction to shippers perhaps than anything else, and that was a reduction of 10 per cent. on all permanent berthing space.

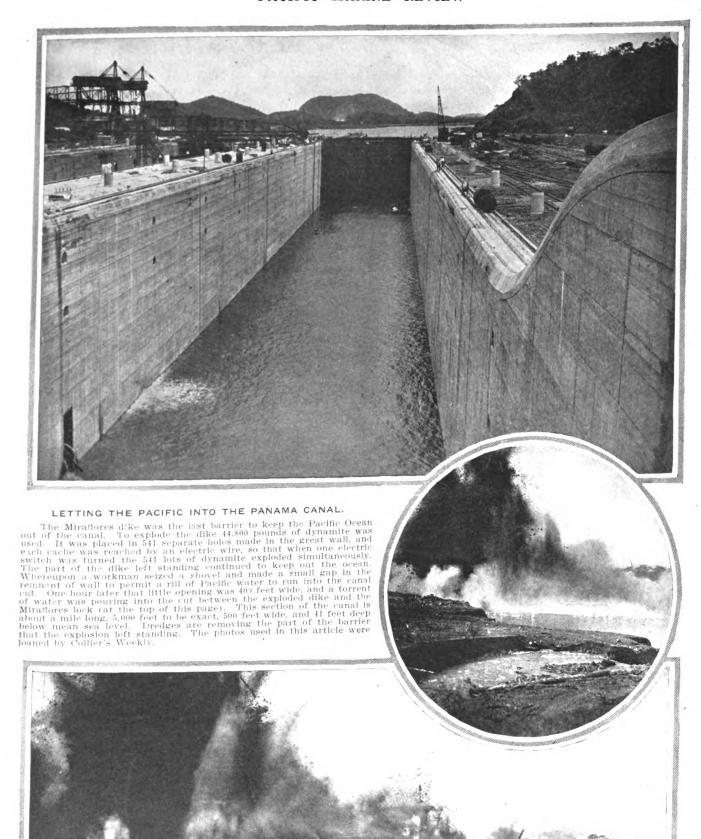
It may be as well to repeat that the sole aim of the present Board is to have the port and harbor of San Francisco in a state of preparenes to receive the great increase in shipping which is confidently expected as a natural result of the opening of the Panama Canal.

A brief description of the harbor itself and its relation to the State and the commerce of the world may not be out of place here. San Francisco Bay is universally acknowledged to be far and away the most important port on the Pacific Coast for many obvious reasons. It has a total area of 420 square miles and a shore line of about 350 miles. The area exceeding 30 feet in depth at low water is about 190 square miles. The extreme tidal range is 8 feet and the mean is 4.3 feet. The bay is perfectly sheltered from ocean storms, is not subject to flood effects, and is absolutely free from ice. From the southern portal of the Golden Gate at Fort Point along the bay shore of San Francisco and San Mateo counties to Dumbarton Point, thence across the narrows and along the shores of Alameda, Contra Costa and Marin counties to Lime Point every mile is suitable and available for commercial and industrial use. The water front development extends from the northeast extremity of the peninsula around into the bay and The as far south as the city and county boundary. jurisdiction of the Board stops short at this point. Exclusive of fairways or forbidden anchorage, there is approximately 100 square miles of available anchorage ground in the bay. The natural advantages of San Francisco harbor are, as already said, obvious-expensive masonry basins or docks in which a fixed level of water is maintained by oceans of machinery and gates, and which only permit of ingress and egress at about the time of high water are not required. It is acknowledged to be a wonderful port-wonderful in its physical conformation as a vast sheltered harbor opening in, through

a narrow and easily defended entrance, from a coast line almost devoid of harbors for hundreds of miles in either direction and wonderful in the strategic relation to its California hinterland and to the great interior of the country. Nature wrought a masterpiece when she made San Francisco Bay. Its great expanse and its navigable connections north and south, through the rich valleys of the San Joaquin and Sacramento, fit it perfectly as the entrepot of a vast empire. San Francisco is the only port on the coast at which any great amount of permanent seawall construction has been done. Work of this character has been carried on for the past twenty years. In that time, nearly 13,000 lineal feet of sea wall have been built at costs ranging from a little less than \$100 to about \$270 per lineal foot. The construction of the sea wall has resulted in reclaiming more than 25 acres from which the annual rental now amounts to about \$1,000,000. The port's funds are derived from its regular revenues, rents, wharfage, dockage, tolls, etc., and the sale of bonds. The revenues from the beginning of the Board's operations in 1863 to June 30, 1912, amount to \$34,212,320 and the expenditures to \$34,328,585. The port is self-sustaining, not a dollar ever having been required from the treasury.

The commerce of the port is very extensive. During the two fiscal years ending June 30, 1912, 1472 vessels of all descriptions of a net tonnage of 1,196,523 were docked at the State wharves, and many if not all of them, were docked numerous times. The tonnage of freight passing over the wharves during the same period was 13,427,848.

The trade of San Franciso embraces every class of commerce that passes over the Pacific Ocean. Not only do the lines of ocean commerce focus at the entrance of the harbor of San Francisco, but on the landward side, transcontinental railways lead the trade of the Eastern States to her wharves and still other roads are directing their energies to make San Francisco their Pacific terminus. Commodious dockage on deep water is the determining characteristic of a great commercial port. Substantial wharves of sufficient area for the reception and assorting of merchandise and its prompt transfer to railroads and teams with adjacent warehouse facilities, are the ultimate demands of a great commerce and all these essential requisites San Francisco possesses.



CONSIDERABLE ACTIVITY IN SHIPPING AT LOS ANGELES.

In a letter received from the office of the Board of Harbor Commissioners of Los Angeles we are advised as follows:

"Replying to your inquiry of October 17, relative to negotiations of the Panama Navigation & Commercial Company for municipal dockage space, we would state that this company proposes to operate a line of small vessels between Los Angeles and numerous ports along the west coast of Mexico, Central America and through the Panama Canal. A representative of the company came to our office some time ago about arrangements to dock at municipal wharves, but inasmuch as the company proposed to make traffic arrangements with the Salt Lake Railroad Company, which reaches along the east side of the harbor, where the city has no municipal wharves, we advised him to arrange for dockage space either with that company or one of the private wharf companies operating on that side of the harbor.

"The American-Hawaiian Steamship Company has completed arrangements to use 1200 feet of municipal wharf and 1000 feet of transit shed in connection therewith. The American-Hawaiian Company contracts to operate this wharf as agent for the city, paying regular dockage and wharfage rates to the city, both on its own commerce and that of any other ships it may accommodate, and the city allows it 20 per cent. of the revenue for acting as the city's agent; but the company guarantees a return to the city of not less than \$15,000 a year for the 1200 feet of wharf.

"This wharf is in the inner harbor on what is known as the Mormon Island Channel, which the city is now dredging to a depth of 30 feet, and will provide berths of 34 feet depth in front of the wharves. Eight hundred feet of this wharf has just been completed, and 600 feet of transit shed 100 feet wide is now building in connection therewith. This, and railroad and street connection and dredging, will be completed by January 1st, when the company expects to take it over, and an additional 400 feet of wharf and 400 feet of transit shed will be built by April 1, 1914.

"The American-Hawaiian Company has assurances from the Government that the Panama Canal will be ready for commercial traffic in March of next year, and beginning with that month the company expects to have a ship out of New York every three days, arriving at this port on the same schedule and returning on a like schedule. It is therefore expected that the two berths will be in practically continuous use."

IMPROVEMENT IN WHARFAGE ACCOMMODA-TIONS AT VANCOUVER, B. C.

Messrs. Evans, Coleman & Evans have recently made a great increase in their wharfage accommodations at Vancouver, B. C., by practically doubling the length of two of their piers, extending them several hundred feet into deep water.

Up-to-date warehouses with the most modern facilities have been built on these extensions and by means of which three ocean liners in port at the same time can be handled very expeditiously, without encroaching upon the accommodation reserved for vessels engaged in the coasting service and making regular use of these wharves.

"Are you a friend of the bride?" "No; I'm the bride-groom."—Judge.

NEW SCHEDULE OF DOCK RENTALS SOON TO BECOME EFFECTIVE.

A new schedule of rentals, based on a square foot occupancy of wharves, has been adopted by the State Board of Harbor Commissioners, to become effective November 1st, 1913. This schedule divides the wharves into three classes, called Class "A," Class "B" and Class "C." Class "A" consists of piers constructed (or to be constructed) since March, 1911, and includes Piers Nos. 17, 26, 28, 30, 32 and 39, and the rental per month therefor has been fixed at \$0.012 per square foot. Class "B" consists of piers constructed prior to the above date, and includes Piers Nos. 1, 3, 4, 5, 7, 9, 10, 11, 12, 13, 14, 15, 16, 19, 21, 23, 25, 27, 36, 38 and 40, and the rental per month therefor has been fixed at \$0.009 per square foot. Class "C" consists of wharves that are leased, and therefore not affected by the new schedule.

This basis for computing rentals for regularly assigned berths is new to the port of San Francisco, and in effect will reduce some rentals and raise others, but the Commission has no doubt but that it will be acceptable, and will meet with but little, if any, criticism among shipping men.

It is estimated that the projected new terminal and dock facilities planned by the leading ports of the world will cost considerably over \$1,000,000,000.

CHANGE IN PILOTAGE FEES PORT OF LOS ANGELES.

A change in the Pilotage Rates at the port of Los Angeles was effected during the month of September, the new rates being as follows:

"For all vessels, except as hereinafter provided, whether inward or outward bound, \$1.00 per foot draft and one cent per ton for each and every ton of net registered tonnage;

"For all vessels entering and departing from the port of Los Angeles, and anchoring in the waters thereof for the purpose of taking on water, fuel, or other supplies for use in or on any such vessel, or for receiving orders. or reporting, but which vessels shall not moor or land at any wharf, slip or loading station, fifty cents per foot draft, and one half cent per ton for each and every ton of net registered tonnage; provided, however, that all vessels engaged exclusively in the coasting trade between ports in the United States, shall be exempted from all charges for pilotage, unless a pilot shall be actually employed."

CONTRACT AWARDED FOR BUILDING AT BREM-ERTON NAVY YARD.

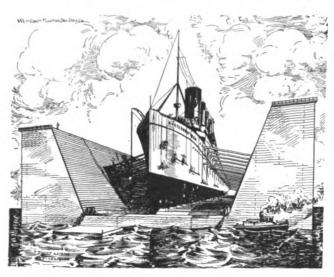
Awards have been made at Washington on the contract for the new combination building to house the ship-fitters' shop, the mold loft and the steel storage shed at the Bremerton Navy Yard. The contract was divided, the American Bridge Company of New York having received the award for the contract for steel work at \$149,640, and the W. N. Concannon Company of San Francisco, the contract to complete the building at a cost of \$88,134. The entire cost is \$237,774. At the last session of Congress \$120,000 was appropriated to start the building, which is to cost \$250,000 when completed. This structure will cover more ground than any other building in the yard.

On October 22nd no decision had been made as to who would convert the steamers "Governor" and "President" into oil burners.



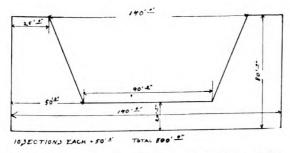
IMMENSE NEW FLOATING DRYDOCK FOR SAN DIEGO HARBOR.

The West Coast Floating Drydock Company, Inc., of San Diego, have commenced construction on what will no doubt be the largest floating drydock on the Pacific Coast. Being built in sections, it can be lengthened a



FLOATING DRYDOCK BUILDING AT SAN DIEGO FOR THE WEST COAST FLOATING DRYDOCK COMPANY.

hundred feet over its initial dimension of 500 feet; the width of each section having been planned to 90 feet for this purpose. Last month quite an event was celebrated when Mayor O'Neall, of San Diego, with a gold wrench turned the first nut in the huge drydock. Mr. F. James, president of the West Coast Floating Drydock Co., Inc., made an address of welcome and in which he said that San Diego needs such a drydock to maintain its prestige as a maritime port of considerable importance and will profit much by this addition to its port facilities with the opening of the Panama Canal. The dock is to be constructed at a cost of \$650,000.



DIMENSION OF WEST COAST FLOATING DRYDOCK.

That the dock will prove a paying venture from the start is the opinion of San Diego steamship men, who point out that theirs is the first port north of Panama which will have a drydock capable of handling the largest off-shore and coastwise ships that will ply through the Panama Canal.

MILLIONS TO BE SPENT AT PORT OF SYDNEY.

A scheme designed to meet the pressing needs of trade and embracing new wharfage with a frontage of 42,600 feet is outlined in the annual report of the Sydney Harbor Trust Commissioners. The work will probably be completed within ten years, and the approximate cost, including resumptions, will be £6,500,000.

HARBOR IMPROVEMENTS AT PRINCE RUPERT, B. C.

In our December number, we expect to publish an illustrated description of the port of Prince Rupert and the developments now under way at this northern port.

In the meantime we are advised by William T. Donnelly, designer of the dock now building for the Grand Trunk Railway system at Prince Rupert, that the foundations for all the buildings in connection with the Grand Trunk improvements, also the foundations for the pier derrick and all the pier work, have practically been completed. The culvert under Hays Creek has been finished and the foundations for the boilers and power house are now proceeding. The steel work for the buildings is now in transportation around the Horn, and is due in Prince Rupert about December 1st. This is being furnished and erected by the American Bridge Company.

The complete electric generating equipment for the power plant and dry dock consisting of two 1,000 K. V. A. steam turbines and generators, together with motors, wiring and installation is being furnished by the Canadian General Electric Company. The timber for the floating dry dock is to be furnished by the Vancouver Lumber Company and the construction of the pontoons for the dry dock is soon to be commenced at Prince Rupert, a permanent organization of the plant having been created for that purpose.

Mr. Donnelly left San Francisco for Honolulu on October 28th on the steamer "Honolulan" in connection with the floating dry dock he designed for the Inter-Island Steam Navigation Company and which is about to go into commission.

TWO CANAL PROJECTS COMPARED.

In view of the approaching completion of the Panama and (New York) State Barge Canals the following comparison of the two projects published by the Buffalo chamber of Commerce is of much interest:

Barge Canal. 540 Miles Long. Feet. Dams, 39. Locks—57 Lift, 2 Guard, and 9 Smaller Locks. Number of Structures Be-tween 350 and 400. Cost, \$127,800,000.
Built by State With a population of 9.000,000.
Excavation, Estimated Total, 114,100,000 Cubic Yds. Concrete, Estimated Total, 2,750,000 Cubic Yards. on to Jan 78,428,286 January Excavation Cubic 1913. Yards. Work Begun, April 24, 1905.

Panama Canal. 50 Miles Long. Total Lockage Lift, 1,050 Total Lockage Lift, 170 Feet. Dams, 4. Locks-6 Pairs. Number of Structures, 12 Locks, 1 Spillway and 4 Dams Cost, \$375,000,000. Built by United States with Population of 90,000,-000. Excavation, Estimated To-tal, 203,710,000 Cubic Yards. Concrete, Estimated Total, 5,000,000 Cubic Yards.
Excavation to January 1, 1913, 188,280,312 Cubic Yards. Work Begun by Americans, May 4, 1904.

M. THOMPSON & CO.

INSURANCE BROKERS AVERAGE ADJUSTERS

E. ALEXANDER, Adjuster

112 MARKET STREET, SAN FRANCISCO



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THE AMERICAN MERCHANT MARINE

BY ROBERT DOLLAR.

Complying with your request to write on this subject, it is difficult to write anything new, as for years it has been worn threadbare, and after all that has been said and written, it is quite evident that the mass of our people do not understand the importance of carrying our own products with our own ships. This is especially

true of our representatives in Congress, as evidenced by the number of bills introduced this session, their object being to make it more difficult and expensive to operate ships both in our coastwise and foreign trades.

Senator LaFollette leads off with the most vicious bill that has ever been aimed at our shipping.

Then there are Senate bills Nos. S. 1617, S. 1654, S. 1661, S. 1663, S. 2221, S. 2224, S. 2433, S. 2875, S. 2999, S. 3085 and House bills Nos. H. R. 4646, H. R. 4479, H. R. 6920, H. R. 7083, H. R. 7212, H. R. 7380, H. R. 7754, and H. R. 7934.

Senator Nelson's bill has some bad points, but much that is good, and in the absence of anything better, with some modifications it should become law. It will improve the condition of the men on board of ships, but it is not intended and will in no way assist us in

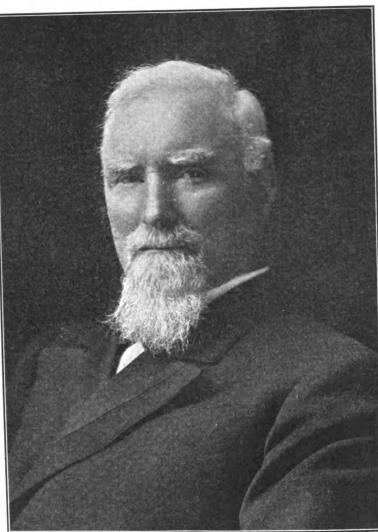
getting a merchant marine, but after all is said and done, there is not one bill that will give us, or even assist us in getting a merchant marine to engage in the for-The 5 per cent. reduction of duty which eign trade. was tacked on to the Tariff bill on goods imported on American vessels is a joke and makes shipowners smile, as it will only assist in the slightest degree to equalize the excessive cost of building and operating an American ship as compared with foreign ships. If the Democratic party were trying to strengthen their position, they have missed their mark, as this will be looked on by the uninitiated as a subsidy to aid the rich ship-Comparison is made with the beneficial effects on our shipping in the early part of last century, when our harbors were full of idle American ships and the foreign ships were doing our carrying. At the present time there are no idle American ships fit to engage in the foreign trade, and a paltry 5 per cent., with no

change in our shipping laws, will be no inducement to anyone to build American ships to engage in the foreign trade.

The same remarks apply to the rider put on the Panama Canal bill, by which we can get American register for foreign built ships to engage in the foreign

trade. The last report of the Commissioner of Navigation stated that not one ship has taken advantage, or rather disadvantage, of this munificent offer of Congress. Another instance of trying to fool the public, but it did not fool one shipowner.

To our Congressmen I cannot help repeating what I have said on many occasions. The shipowners want none of your subsidies or assistance of any kind or description. We have given up going to you as beggars with our hats in our hands, and now tell you to give us no advantage of any kind whatever, but we demand that you put us on exactly the same footing as other nations put their shipowners, namely, permit us to buy our ships where we can get them cheapest, and to operate them under the same conditions as our foreign competitors are doing, and give us no better



ROBERT DOLLAR—ONE OF THE MOST ACTIVE ADVOCATES FOR AN AMERICAN MERCHANT MARINE.

terms than they enjoy of any kind or description. The American shipowners will do the rest and give our country an American merchant marine worthy of the

This will be no experiment, as at the present time there are over 2,000,000 gross tons of shipping flying foreign flags that are entirely owned by American citizens. It goes without saying that inasmuch as Americans are able to operate those ships in this manner at a profit that they could do it equally as well if the American conditions were the same, and then they could fly the American flag instead of flags of foreign nations.

If the voters of this country could only see the situation exactly as it is, our politicians would be compelled to give up trifling with this, the most important subject that is before our country to-day, and permit us to carry our products to foreign countries instead of compelling us to use foreign ships to do it.

FREIGHT SERVICE BETWEEN BOSTON AND PACIFIC COAST TO BE ESTABLISHED

Messrs. Livermore, Emery and Cleveland, executive officials of the Boston-Pacific Line, are now in San Francisco, seeking to ascertain, as nearly as may be, the amount of tonnage they might expect both east-bound and west bound, should they put on a line of steamers from Boston to Pacific Coast ports.

While in Seattle, the Transportation Bureau of the Seattle Chamber of Commerce put them in touch with many of the heaviest shippers at that port. It was shown that this new line would undoubtedly receive large patronage as they might expect heavy shipments of lumber, salmon, condensed milk and other products of the territory in the vicinity of Puget Sound. If refrigerator service is installed on their vessels, a large amount of the apple shipments might be diverted from Yakima Valley, Wenatchee Valley and the Okanogan Country, from which latter point the Great Northern Railway is now building a branch line from Wenatchee north. The apple industry is in reality in its infancy, the shipments this year amounting to from twelve to fifteen thousand carloads. It is believed that the branch north from Wenatchee into the Okanogan country will double the shipments from the northern part of the State in three or four years from now.

The Transportation Bureau of the Seattle Chamber of Commerce held a meeting while these representatives of the Boston-Pacific Line were in Seattle and this meeting was largely attended by those thoroughly posted on the lumber, salmon and flour industries. Every encouragement was given this proposed steamship line and assurance was also given that proper dockage facilities could be secured at reasonable rates at the port of Seattle

Messrs. Livermore, Emery and Cleveland expressed their thorough satisfaction with the port of Seattle and the prospects for the deevlopment of a freight service between that port and Boston.

This company proposes to place a line of six steamers in service between Boston, via the Panama Canal, to ports on the Pacific Coast. Four of these vessels will be of 4500 tons each and two will be of 9000 tons each. The vessels will be operated on a fortnightly schedule. It is expected that approximately twenty-five days will be consumed in the voyage from Seattle to Boston.

The ports of Tacoma and Portland were also visited and these gentlemen are now in San Francisco seeking similar information and making arrangements for the successful operation of their line. The port of Los Angeles will also be visited before they leave for the East.

The following is a copy of a letter written by Mr. Cleveland prior to his visit to this Coast and which gives a good deal of information concerning this company's plans:

Lawrence & Wiggin, Manufacturers Hardwood Lumber, 70 Kilby Street.

Boston, Mass., September 29, 1913.

St. Paul & Tacoma Lumber Company,

Tacoma, Washington.

Gentlemen

We have practically completed the organization of a transportation company which has already chartered four steamships, which will be ready to inaugurate regular fortnightly sailings from Boston via the Panama Canal to the Pacific Coast and return. In addition to these

four smaller steamers, carrying about 2,000,000 feet of lumber apiece, which are being fitted up with all the latest improvements for the rapid loading and discharging of cargoes, we have two larger steamers being built especially for this purpose at a cost of \$600,000 each that will be ready to enter the trade in July next. These larger steamers will have a capacity of 4,000,000 feet each. If this fleet already arranged for does not have the capacity for the amount of business we hope to do, we have four more steamers that we can put in on this service, and financing has been arranged for the building of two more of the larger ones if the trade warrants.

This transportation company has also arranged for a very large terminal at this port with deep water and rail connections, the total property covering twelve acres, seven acres of which will be used for the storage of lumber in the rough, with ample sheds for finished lumber, and with resaws, cranes, etc., especially designed for Pacific Coast lumber.

To keep the steamers going, that have already been arranged for, we shall require at least 60,000,000 feet of lumber per year.

Now this arrangement, which is the only line that is, or you might say, will be established from Boston, will take care of not only the New England trade, but New York State as far west as Buffalo.

In addition to the regular lumber, at times, we can fill these steamers with ties and shingles. We understand, from the canvass we have made of the trade, shingles will arrive in much better condition in this manner than by car, as they can be shipped green, and as you know, a green shingle is a better article than a kiln-dried one.

Now, Lawrence & Wiggin, with whom I am now connected as manager of their Pacific Coast lumber department, own these large terminals, which represent an investment of over \$2,000,000. This makes it a particularly good combination, because they are an old lumber concern, thoroughly posted on matters of this kind, and can, without doubt, make satisfactory arrangements with you for the handling of this product on a mutually satisfactory basis.

We have practically determined on a rate of freight of 40 cents per 100 pounds to Boston on lumber, based on the association shipping weights and of 50 cents per 100 pounds on shingles based on the dry association shipping weights of shingles, although we will take those in the green at the same figure.

To thoroughly understand the situation on the Coast, our representatives, who will manage the steamship end of it, will leave here on October 7, for the purpose of ascertaining where they can get their regular cargoes assembled, and where they will get the promptest despatch so that the line can be run to full efficiency. As we want to facilitate their trip in every way, they will only call on manufacturers who will be interested in this arrangement, and we would thank you to wire us on receipt of this letter if you are interested in this proposition. There is a bare possibility that I shall accompany them, although I have so much to do here in regard to the local market for Coast lumber that I hate to spare the time, and I do not want to leave if I can help it, but will, of course, make a trip out there to superintend the loading of some of the first steamers.

If your telegram is favorable, we shall give them a letter of introduction to you so that you can assist them in every way and after talking with them, we



anticipate that it would be quite important for you to make a trip here, at your earliest convenience, to look over the situation at this end and complete the arrangements for handling the lumber.

Yours respectfully,

LAWRENCE & WIGGIN,

(Signed) H. D. Cleveland, Manager Pacific Coast Lumber Department.

C. P. R. NOT TO USE PANAMA CANAL.

Under date of October 17th, the Vice-President of the Canadian Pacific Railway Company, at Montreal, writes us as follows:

"Replying to your letter of the 9th instant, it is not the intention of this company to operate a steamship service via the Panama Canal."

MR. W. G. SICKEL VISITS SAN FRANCISCO.

Vice-Director W. G. Sickel, of the Hamburg-American Line, who has charge of this Company's freight and traffic operations in New York, visited the Pacific Coast during October and spent some little time both at San Francisco and Seattle.

Mr. Sickel obtained considerable data as to the possibilities in store for Pacific Coast ports with the opening of the Panama Canal and in which the Hamburg-American Line is much interested. Mr. Sickel decided that the services now operated by the Hamburg-American Line to this Coast would continue for some little time without any material change.

NEW SERVICE TO BE INAUGURATED BY MESSRS. SWAYNE & HOYT.

Messrs. Swayne and Hoyt, steamship agents and brokers of this city, will operate a new line of freight steamers from Chinese, Philippine and Japanese ports direct to San Francisco. The vessels, to be known as the Red Funnel Line, will load their outward cargo at San Francisco and return direct to their respective ports.

For the present these vessels will operate on about a three-weekly service, but the interval between loadings will, in all probability, be reduced after the line has become established.

The first steamer of the line will be the "Indrawadi," due here the 26th inst. with cargo from Hongkong, Philippines and Japan. She will be followed by the "Inverclyde" which is now loading at Philippine ports and thence to Hongkong and Japan. She will arrive here early in December, and the "Indramayo," loading at the same ports, will arrive here the end of December.

More detailed information concerning the new service will appear in our December issue.

All praise is due the enterprising firm of Messrs. Swayne & Hoyt for inaugurating this new service, and we bid the Red Funnel Line welcome to our port. May every success attend it.

SOUTH AMERICAN STEAMSHIP COMPANY NOT TO EXTEND SERVICE TO SAN FRANCISCO.

In a letter dated Callao, Peru, October 1, the manager of the Compania Peruana de Vapores y Dique del Callao states that they are not at present thinking of opening up or extending their service to San Francisco, but in the event that they decide to do so, they will be glad to so inform us.

PANAMA RAILROAD COMPANY PLANS SERVICE VIA THE CANAL.

New York, October 15, 1913.

Mr. J. S. Hines, Publisher, Pacific Marine Review, 24 California Street, San Francisco, Cal.

Dear Sir:

I have your letter of the 9th in which you ask for information concerning this Company's plans in connection with the opening of the Panama Canal. In reply I beg to say that it has been decided that the Railroad and its Steamship Line will continue to be operated as heretofore.

The terminals of the Company's combined service are New York and Balboa, the Steamship Line operating now between New York and Cristobal, the Atlantic terminal of the Canal, from whence cargo and passengers are now transferred by rail to Balboa. It is possible when the Canal is opened that the service of the steamers may be extended through the Canal to Balboa without in any way affecting the continued operation of the Railroad. There is no immediate probability of their present service being extended beyond that port to Pacific Coast points either North or South. Steps in that direction would be taken only upon the initiative of the United States Government, the owners of the Company's property, or as the result of affirmative Congressional action upon proposed legislation authorizing the establishment of a United States Government Line to San Francisco and ports beyond, such Line to be operated by the Panama Railroad Company. The motive of the Government in establishing such a Line would be based no doubt upon its ability therewith to regulate competition so as to insure the maintenance of reasonably remunerative rates to carriers in the interests of the general public.

Truly yours.

(Signed) E. A. DRAKE, V. Pres.

A PRAISEWORTHY EFFORT.

The Daily Journal of Commerce, of San Francisco, is making a strenuous effort to stimulate the trade and commerce of this port.

This enterprising daily paper intends sending three "Foreign Trade Commissioners" to the Philippines. China and Japan. They are to leave here on one of the Pacific Mail liners on March 5, 1914, and will return on June 6, 1914. The commissioners are to be decided by vote-every subscriber to the Journal of Commerce having some say in the matter.

H. J. Chamberlin of Montreal was re-elected president of the Grand Trunk Railway system at the annual meeting of stockholders at Detroit, Mich., on October 8 Officers and directors were elected for all the branches of the system, but few changes were made.

Under date of October 14, 1913, C. H. Nicholson, Manager of the Grand Trunk Pacific Coast Steamship Company, Ltd., advises that no plans for the extension of this company's service in connection with the Panama Canal are to be made public at the present time.

The contract for the construction of ten 36-foot selfrighting and self-bailing lifeboats, with gasoline engines. has been awarded by the U.S. Life Saving Service to the Electric Launch Company of Bayonne, New Jersey.



FREIGHTS AND FIXTURES. By Page Brothers.

Freights have continued active since our last report on the 25th of September and though freight rates have weakened materially in Japan and Chinese waters and in the Atlantic, and especially in the Argentine, rates have not only been maintained on our Coast, but have become firmer, due to the scarcity of tonnage on this side. It means that steamers will not head to California, Oregon or Washington unless freights paid them are attractive. Business from the north for United Kingdom has been singularly inactive considering the large crops harvested, but the lively demand for wheat and flour to the Orient has enhanced the price of wheat above the English parity value, thus stopping shipments. Only one steamer has been fixed, "Harpalion" from Portland to United Kingdom by Strauss & Co., with a full cargo of barley at 38/- for orders; and from this port, Balfour, Guthrie & Co., have chartered "Harpathian" at 40/- to Liverpool or London to carry general cargo, which has offered in such quantity that their Harrison Line steamers, alone, have not been able to handle same. Messrs. Grace & Co., have also had to add to their large fleet and have chartered steamer "Queen Margaret" at 4/6 on the dead/weight for about five months, delivery and redelivery west coast, South America. Davies & Fehon of Sydney have extended their time charter on "Manningtry" for one further round in their Australian business at 5/6 on the dead/weight. They have also chartered "Strathendrick" at 5/- for a voyage down to Australia, and steamer "Koju Maru"-probably at about the same rate, similar voyage.

The Charles Nelson Company have orders to load steamer "Auchendale" for Scott, Henderson & Co. of Sydney, chartered by them on private terms. And Gibson & Company have taken the steamer "Hornelen' from J. J. Moore & Co., recharter, at 5/6, delivery off San Francisco Lightship and re-delivery Newcastle/Melbourne Range. Steamer "Robert Dollar" taken by Southern Pacific Railway Company for cotton to Japan was loaded in four days with a full cargo of about 14,275 The same people have chartered steamer "Messina" on private terms for cotton hence for November loading. And the Santa Fe Railway Company have engaged steamers "Indrawadi," "Inverclyde" and "Indramayo" to handle their cotton engagements from this port to Japan. Demand for any more cotton steamers has ceased, owing to the higher prices asked by growers. It is said that the Japanese buyers have now turned their attention to buying the staple from India. The Royal Mail Line have, on account of suitable steamers not being available, taken the steamer "Solveig" at 4/6, delivery and re-delivery Japan, or re-delivery China, to follow steamer "Monadnock," for which they paid 6/9 on the dead/weight for the voyage over from Portland to the Orient-an advance of one shilling and six pence on their former charters. Steamer "Damara," whose charter with Grace & Co., runs out in November, will go on the berth for owners' account, from the north and possibly here, to Charleston, New York or Boston.

Sailing vessel rates for lumber are from one and three to two shillings per 1000 feet B. M., higher than our rates, last reported. They have been especially active to the west coast.

I am very glad to do anything toward arousing a sentiment for the upbuilding of the Merchant Marine. Its condition should be a source of humiliation to every patriotic American and we ought to take some steps towards its rehabilitation.

(Signed) WESLEY L. JONES.
United States Senator.

SHIPPING AT VANCOUVER, B. C.

The Harrison steamer "Huntsman" arrived in Vancouver on September 24 with 2000 tons cargo from the U. K., which was discharged at the Johnson wharf. After partly loading at the Johnson wharf, she crossed to the Evans, Coleman wharf for about 12,000 cases of canned salmon and 350 tons salmon oil, and sailed on the afternoon of October 1st.

The Blue Funnel liner "Antilochus" arrived on Thursday, October 2nd, with about 3000 tons cargo, discharging at the Evans, Coleman wharf. The "Ajax" of the same company is due in on October 9th to load canned salmon, salt herring, scrap tin, etc.

The British steamer "Oceano" has been chartered to load a cargo of coal at Newcastle, N. S. W., for Messrs. Evans, Coleman & Evans, Ltd., Vancouver, October loading. Owing to the strike at the Vancouver Island mines and the consequent shortage of coal, this charter has been rendered advisable in the interests of this firm's extensive coal trade.

The Hamburg-Amerika steamer "Uckermark" arrived at the Johnson wharf with 550 tons of European cargo, and after discharging sailed on October 7.

The Blue Funnel steamer "Antilochus" arrived October 2, with about 2,700 tons general cargo. She sailed again on the 12th October, amongst her outward cargo being 77,000 cases of salmon.

The Harrison steamer "Architect" is in port since October 15 with 1,400 tons cargo. She will load up from both the Johnson wharf and Evans Coleman wharf, the latter having 30,000 cases of salmon for despatch per this vessel.

After being delayed a week at Montevideo for machinery repairs, the Maple Leaf line steamer "Santa Rosalia," on passage from New York with steel rails, arrived at Vancouver on October 14. The vessel did not call at Victoria on this occasion, the intention being to send the Victoria complement of cargo across in scows. It is expected that the vessel will finish discharging her Vancouver cargo about the 21st of October, after which she will proceed to Prince Rupert with steel rails intended for the Pacific Great Eastern Railway. On the way down the coast she will take as outward cargo from the Evans Coleman wharf, Vancouver, 100,000 feet of lumber for Dunkirk and 140 tierces of tallow, etc.

The Blue Funnel liner "Ixion," due at Tacoma, Wash., about 24th October, is expected at Vancouver on the 30th October, with about 1000 tons U. K. cargo and 750 tons from the Orient.

Regarding the coal situation, the position at the collicries on Vancouver Island remains practically the same, the mines at Nanaimo and South Wellington not yet having fully resumed work, though a few small boats have received bunker coal during the past week.

Large shipments of coal are being imported into Vancouver from the mines in the State of Washington, and present indications are that this commodity will be at a premium during the coming winter for ships' bunkers and domestic purposes.

In the advertisement of the Babcock & Wilcox Company, which appeared on page 56 of our October issue, a slight typographical error was made in giving the Test Record of Evaporation. This should have read "From and at 212 degs, with 9" draught, 18.7 lbs. per sq. ft. of H. S. and 15.3 lbs. per 1 lb. of oil, instead of 9" draught as it read in the advertisement.





SAN FRANCISCO, CALIFORNIA, U. S. A.

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AN IMPERATIVE NECESSITY.

"The Englishman, is, roughly speaking, the man in possession, and though at one time he seemed somnolescent. at present he is very wide awake. He has many advantages; for the transport services cheap, economically worked ships, carefully organized trading facilities throughout the world and the knowledge and experience which enable him to retain old trades and to be the first to open new ones."

This statement is contained in an article written by a professor in an English university and on the subject of "The Effect of the Panama Canal."

Mr. Senator and Mr. Representative, why oh why, do you continue to contemplate the American shipowner as being so well able to take care of his interests in spite of the burdens you are continually imposing on him? Are you faithful representatives of the American people when you make it necessary that their foreign trade amount-- Well, the following shows just what an excellent era our country is enjoying in this respect today:

"The position of our foreign trade, as disclosed by the The Government figures for August, is most striking. official figures reflected an increase of exports over imports for the month of \$50,108,000. This was the largest export excess ever shown in the month of August. But the figures for the eight completed months of the fiscal year ending with August reveal a more remarkable condition which is bound to exert a powerful influence upon financial conditions from now on. The export excess for that period amounted to \$358,510,000, as against an export excess for the same period last year of only \$228,271,000. In other words, our foreign trade to date has given this country an international trade balance which is \$130,239,000 greater than was shown in the same period a year ago. What is more significant, however, is that this year's total is within one million dollars of the export excess of 1901, which was the largest ever shown in the United States, except for the unprecedented total of 1908, when the striking enlargement of our foreign trade was due to the wholly unusual operation attending the after-panic recovery. The extraordinary situation of this year has resulted partly from the \$17,052,000 falling off in August imports, due to the natural disinclination to import goods just before the tariff duties were to be lowered, and to the unprecedented outward

movement of bread stuffs which footed up \$28,687,600 for the month of August. The present position of our foreign trade, therefore, is most extraordinary and, considering its broad application to the money market outlook, especially as regards our ability to obtain gold from Europe later on in the year, it is of the very highest importance."

One million dollars a day-over three hundred million dollars a year-seems though the United States could do a great deal with this amount each year, but just now these millions are not available. Why? Because they are being paid to foreign shipowners to carry America's foreign commerce.

As has been so often said "What would the United States do in the event of war?" It isn't a problem that is difficult to solve-we now depend on foreign ships to bring coal from the Atlantic to the Pacific Coast to supply the vessels of the Navy Department stationed on this Coast. In time of war-oh, that is different-a nation must then depend almost entirely on its own resources, but really now if it came to a naval fray how would the Navy on which we are spending so many millions each year fare? A few years ago when our fleet made its trip around the world, foreign vessels attended as colliers. This is somewhat of a disgrace to our country. Another disgrace, far more lasting and impressive will be the procession of ships through the Panama Canal.

Now just how many American ships engaged in the foreign trade will use the canal during 1915? As far as we have been able to ascertain and from the present outlook, we can safely say none.

On the other hand, what of the tons and thousands of tons of foreign shipping owned by Americans? Why do our Senators and Representatives make it impossible for the American shipowner to operate under his own flag as it is now possible for him to make his investment pay under a foreign flag? What does the American nation gain by having no ships?

Isn't it absolutely imperative for the welfare of our country that we promote foreign trade? Does it make us any more independent when we must go to foreign shipowners to carry our products-to seek out new

trade routes for us, etc.

Our members of Congress must realize that there is something radically wrong, otherwise we would have a few ships to our credit in the foreign trade. Is it not of sufficient moment-this matter which is becoming more alarming each day? Won't some one of our Senators or Representatives introduce a bill for the revision of our navigation laws-thereby making a name for himself-doing every citizen of the United States some good in enabling our shipowners to operate their ships on the same basis as foreign owners and by this action give those American citizens who are operating their ships under other flags, a chance to have the protection and to protect their own flag, the Stars and Stripes of America?

THE PREFERENTIAL DUTY CLAUSE OF THE TARIFF BILL.

We will not begin this by stating that we do not admire Representative Oscar Underwood for insisting that the clause granting American ships in the foreign trade a discount of 5 per cent. on all goods brought into this country be retained in the Tariff Bill, because we do admire Mr. Underwood for his stand in this matter and think he is to be congratulated on the plucky fight waged in the interests of the American merchant marine.

While many of our shipowners contend that this clause



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is of no avail whatever, we think it well to look upon it as somewhat of a victory, in that it may give Congress the courage to revise some of our treaties with the foreign powers concerned and is the first gleam of light the American shipowner has had for some time with the consent of our members of Congress.

When we have succeeded in convincing our Representatives at Washington, D. C., that the navigation laws must be revised, and our ships are operated on somewhat the same basis that foreign owners now operate their ships and we really have a merchant marine, then this 5 per cent. reduction of duty will come in rather handy.

Then again, hasn't this question of the preferential duty clause in the tariff bill been a means of attracting a great deal of attention to our cause and aren't the daily newspapers doing something in this connection to arouse the interest of our indifferent public?

Just let the interest in the question of a merchant marine revive throughout the United States and then see if we do not succeed in obtaining some favorable action from Congress.

We are at a loss to understand why our Senators and Representatives do not get together and help the American shipowner in this respect-seems to us they have helped the foreign owners long enough-it's our turn now.

Judging from the letters received at our office, they all like the idea of an American merchant marine, but all seem to have different ideas about the subject, some favor subsidies and others think that our seamen are not treated properly and that this has caused a decline in our They all seem to favor legislation to restore our merchant marine, but none of them appear to have the interest or initiative to look into this subject and introduce a bill that will allow an American shipowner to have the same freedom as the present carriers of our commerce.

We want to protect our shipbuilding yards-these are now maintained by building vessels for our coastwise service and vessels for the United States and other Governments. We want to promote foreign trade—we want to restore our merchant marine in the foreign trade, where our shipowners will have to meet keen competition.

We make the following suggestions:

Revise our navigation laws to protect our shipowner in the foreign trade; let him buy his ships where he will and operate them along the safe, sane and at the same time paying lines as the foreign owner.

Now, as our coastwise shipping has no competition, let our American yards continue to build these ships, but by all means allow other clauses of the revised navigation laws to apply to vessels operated in our coastwise trade, as their owners are now carrying just about all they can handle.

The American shipowner will be only too ready to point out the defects in our navigation laws-the hydrostatic boiler test, which is now yearly applied, our lack of free-board, etc.

Then see what would happen.

Our shippards would be enlarged to accommodate the orders they would receive for both coastwise and foreign ships, for as soon as matters readjusted themselves, ships for the foreign trade could be built at home as well as abroad

We earnestly insist that our Representatives at Washington, D. C., give some attention to this matter. Nation wishes to share some of the prosperity which will result with the opening of the Panama Canal-we wish

to increase our foreign trade-to seek new markets for our products and to do our own underwriting.

We are applying to the proper source for help and with the idea that you Senators and Representatives, whose sacred duty it is to protect the interests of the American people, will hear us.

THE SEAMEN'S BILL AGAIN!

In our minds we have rebuilt our Merchant Marine, our shipyards are busy and our factories and people are busy-we are sending goods manufactured by the people of the United States to the four corners of the world and in American ships-but hold on a bit.

That Seamen's bill, in the defense of which our shipowners fought so nobly at the last session of Congress. A great deal of time and patience was spent last year, many earnest arguments were advanced by our Pacific Coast shipowners and every endeavor made to convince our Representatives at Washington that our shipowners had some rights.

Many reasonable concessions will be gladly made in favor of the American seamen, but when it is proposed to abrogate numerous foreign treaties, dictate to those who now have the honor of carrying our passengers and manufactures to foreign countries as to how they should manage their crews, whom they are paying out of their earnings, give our American sailor a right to desert, to tie up his vessel at any port he chooses, and, in short. do most everything to ruin the shipowner, who has his investment at the mercy of the sailor, then it is high time to cry stop.

Our shipowners are rightly disgusted-no attention is being paid to the Seamen's bill that is now before Con-If all their strenuous efforts were of so little avail less than a year ago, it seems hardly worth while to try again.

However, we must arouse ourselves. On the verge of a brighter outlook for our Merchant Marine, we cannot allow this bill to come along and practically annihilate our every chance.

We hope to have something more encouraging to report in this connection in our December issue. Surely we have some friends and supporters in the Senate and the House, and surely they have not all been placed under the spell of the leader of the Sailors' Union!

The commerce and ships this bill would destroy will involve millions and we hope our inland Senators are not so shortsighted as to think that their welfare does not depend somewhat on the products exported from this country.

Senator La Follette was so anxious to pass the Seamen's bill this session that he did not wish to wait until the numerous Senators who are now on their vacations returned to Washington-insisted that the bill be taken up while only nineteen Senators were present.

We cannot understand his motives in this respectone ship in a thousand is lost on account of an in-If the bill in question passes it is sufficient crew. hard to tell the outcome, sanctioning, as it does, mutiny and giving the sailor every power over the owner of the vessel in which he sails and is allowed by law to desert whenever it suits his fancy.

Better times are coming if we succeed in getting these vicious bills out of the minds of our Representatives and supplanting some constructive ideas instead of this wholesale slaughter they seem to contemplate.

On October 18 we sent the following telegrams regarding the Seamen's bill to some of our friends in



Washington, D. C., in the hope that some good might be accomplished. The following telegram was sent to Senators Burton, Brandegee and Jones:

"To keep from absolutely killing all American shipping, we, as the representatives of the Pacific Coast shipowners, earnestly beg that you do all in your power to remedy the drastic measures in the vicious Seamen's bill aimed at our shipping, which, if passed, will make it impossible to have any ships under the American flag.

"PACIFIC MARINE REVIEW."

This is the telegram sent the Hon. Oscar W. Underwood:

"If the Seamen's bill now before the Senate passes it will destroy all good which will result from passage of your preferential duty clause in the tariff bill. Measures contained in the Seamen's bill so drastic that shipping industry of entire United States will be crippled and no new ships will be built with this law in effect. The bill sanctions desertion of crew at any port they see fit and even extends right to foreign crews to desert at our ports. Importance of killing the drastic measures of this bill cannot be too vitally emphasized. We are with you in the fight for preferential duty as editorials in our November issue will evince. Shipowners on the Pacific Coast, whom we represent, absolutely discouraged at prospect of Seamen's bill passing; made strenuous effort last year to prevent proposed vicious measures passing-too discouraged this year to make any effort whatever. Hope you use every means to block the Seamen's bill which if passed will offset your own good fight for American shipping, and force few remaining American ships to seek refuge under a foreign flag.

"PACIFIC MARINE REVIEW."

AIDS TO NAVIGATION IN ALASKAN WATERS.

We have received the following letter from the Coast and Geodetic Survey at Washington:

"In response to your letter of the 3rd instant, I beg to state that it has been the practice now for a number of years for this Bureau to have from four to six vessels surveying in Alaskan waters during the entire available surveying season each year. During the last six years six vessels have been on this work each. It is the intention to continue this practice.

"Respectfully yours,

"F. W. PERKINS, "Acting Superintendent."

There is no doubt that this service is doing all possible to assist the safe navigation of vessels in Alaskan waters and it is through no fault of theirs that wreck after wreck has occurred in these at present dangerous waters of the North.

If an adequate appropriation were made by Congress for this very important and urgent work, and the different departments of the Government concerned given power to expend this appropriation as they deemed necessary and advisable, following the suggestions and urgent requests of those who know the aids to navigation which are so vitally needed, we would not continue to lose so many lives and vessels in these unguarded channels and bays.

As it is now, these services of the Government know what is needed but their hands are tied. The appropriations for the necessary aids are so slow in forthcoming that the whole affair is very discouraging, especially to those operating vessels over Alaskan routes.

One seldom hears of a ship being lost through an insufficient or inefficient crew in these Alaskan waters. The masters know that the lights and buoys along these routes are far from being adequate and every time one of our ships is lost this fact is brought home to almost all residing on the Pacific Coast.

Alaska with its dependence on ships as a means of transportation must be properly protected. Congress must be fair and Alaska's needs are only needs after all and not exaggerated demands.

In this connection, we publish herewith extracts from a letter recently received from the Department of Commerce and addressed to Senator Wesley L. Jones, copy of which Senator Jones kindly sent us:

"Receipt is acknowledged of your letter of Sept. 3rd, with reference to the wreck of the steamship 'State of California,' which struck a reef in Gambier Bay, Alaska, and calling attention to the need of more aids to navigation in Alaskan waters.

"I have to state that the work of improving the aids to navigation in Alaska has progressed steadily, notwithstanding the severe loss to the service caused by the wrecking of the lighthouse tender 'America,' a vessel well adapted to work in Alaskan waters.

"The total number of aids to navigation in Alaska including lights, fog signals, buoys and daymarks, in commission at the close of the fiscal year ended June 30, 1913, was 276, including 93 lights, representing an increase of 56 lights since June 30, 1910, or 150 per cent.

"Measures have been taken to mark the reef in Gambier Bay with a suitable aid to navigation.

"The work of rebuilding and improving the present light and fog signal station at Lincoln Rock, under the special appropriation of \$25,000.00, made by Act of March 4, 1911, has been completed.

"The Act approved March 4, 1913 (37 Stat., 1010), authorizing a light and fog signal station at or near Cape Saint Elias, at a cost not to exceed \$115,000.00, but no appropriation for the purpose has yet been made by Congress. An item for this work is, however, included in the pending urgent Deficiency Bill at page 32 thereof.

"House Bill 7206 and Senate Bill 2676 of the present session of Congress provide for the construction of a lighthouse tender to replace the 'America,' and on August 9, 1913, the Department transmitted to the Chairman of the House Committee on Interstate and Foreign Commerce a favorable report on House Bill 7206, which limits the cost of the tender to \$325,000. A full statement setting forth the necessity of providing this tender at the cost stated is printed at page 27 of Supplemental Estimates, House Document No. 88 of the present session of Congress. An estimate of appropriation for this tender will be included in the Department estimates for the fiscal year 1915.

"There will accompany the Department estimates for 1915 an item for the establishment of aids to navigation in Alaska, in the sum of \$60,000,00. This item is included among the works considered essential for the needs of navigation, and which it is recommended be undertaken as resources permit. The item will not be transmitted as an estimate of appropriation on account of the necessity for providing for many other projects, and in view of other appropriations to be asked for in the case of Alaska as indicated above, but it is, however, deemed a worthy object, and if Congress, considering the needs in other localities should appropriate the necessary funds for this item, the Lighthouse Service could expend the amount advantageously in the interest of navigation."

The following letter from Senator Miles Poindexter, received while our issue was on press, is encouraging: United States Senate, Committee on Expenditures in the War Department.

October 14, 1913.

Mr. J. S. Hines, Publisher,
Pacific Marine Review, 24 California St.,
San Francisco, California.

Dear Mr Hines:

I have your favor of 4th instant with reference to securing further charting and lighting of Pacific Coast points, especially in Alaska. I have taken the matter up with the Coast and Geodetic Survey, and enclose herewith copy of their statement regarding the status of the work of surveying and charting the waters off the Alaskan Coast.

I presented the resolution of the Seattle Commercial Club to the Senate, and as soon as the committees having jurisdiction over the matter begin to hold their meetings, I intend to push the work of charting and lighting that Coast. Will endeavor to secure a sufficient appropriation for the work at the regular session, which convenes in December.

With kind regards.

Very truly yours,

MILES POINDEXTER.

P. S.—I am glad to say that the urgently needed light and fog-horn for Cape St. Elias was provided for at the last session of Congress.

M. P.

Sept. 5, 1913.

Hon Miles Poindexter, United States Senate, Washington, D. C.

Dear Sir:

I beg leave to acknowledge your letter of September 3d enclosing the Resolutions of the Seattle Chamber of Commerce in reference to the sad loss of the S. S. "State of California."

Upon the receipt of the news of the wreck, telegraphic instructions were sent to the Surveying Ship "Gedney" at work on the West Coast of Prince of Wales Island, to proceed to Gambier Bay to locate the rock.

A survey of Gambier Bay was made in 1889 and it was considered to be sufficiently well charted and the results were published.

It has been stated by the newspapers that the ship struck a submerged pinnacle rock. In this connection it must be observed that such pinnacle rocks very often escape detection by sounding with the lead even where surveys have been made in great detail. The increased draught of vessels has made them a menace in all parts of the world where they occur. It is for this reason that in recent years this Bureau has made and is making resurveys by means of a wire drag which alone is competent to disclose all the pinnacles in a given area.

The Survey is now publishing about 100 charts covering Alaskan waters. The major portion of Southeastern Alaska has been surveyed along commercial routes in such detail as was possible to meet the pressing demands of commerce. A minor portion of the rest of Alaska has been covered by our surveys.

I beg leave to say that I have included in my estimates a request for permission to build three new vessels for the Pacific Coast with a view to expediting the Alaska surveys and have also asked for a small increase in the number of officers.

I may add that the many requests for special surveys

by parties interested in Alaskan enterprises have been promptly complied with. Respectfully,

(Signed) O. H. TITTMANN, Superintendent.

The following letter from Senator Wesley L. Jones' secretary, dated Washington, D. C., October 18, plainly shows that some good has resulted from the efforts made by those interested on the Pacific Coast in obtaining the aids necessary for the safe navigation of Alaskan waters:

"With further reference to the matter of additional aids to navigation in Alaskan waters, I am glad to inform you that the Senator is advised by the Secretary of Commerce that the item referred to in the letter from the department dated September 10, 1913, in regard to the establishment of 'aids to navigation' and the improvement of existing aids in Alaska, in the sum of \$60,000, will be taken from among the works recommended in the department estimates for 1915, to be undertaken as resources permit, and will be placed in group one of said estimates among works immediately necessary for the best interests of navigation. This will insure more favorable consideration by Congress than would be the case if this item were retained in its present position in the estimates."

The letter referred to in the communication from the secretary of Senator Wesley L. Jones, appears in the above editorial.

THE DIESEL ENGINE.

While it is not certain that Dr. Diesel has perished, his disappearance makes it appear probable as there apparently was no object in his seeking seclusion.

In any event his name brings to the minds of all the readers of this paper a knowledge of the wonderful development of the heavy oil engine; in fact a development which as yet is in its infancy, the final development of which is limited only by the supply of crude oil in the world, and the scientists assure us that the end is not in sight yet. As regards the future development of the marine oil engine we might quote the following from one of our contemporaries, which is in general accord with our views on the subject:

"The constructive optimism which is so valuable an asset in the development of new inventions frequently leads to their application on a scale which is not guaranteed by the actual practical development of the art. It begins to look as though the installation of exclusive Diesel engine and other oil engine plants of large powers in hig ocean steamships was a case in point. We say this with the full appreciation of the fact that the work of the German engineers in this direction has been both brilliant and courageous and marked by a lavish expenditure of brains, time and money. Although the leading builders of large marine oil engines are not discouraged, they realize that a large amount of research and experimental work must be accomplished before oil engines can be built in sizes much larger than the largest that are now in service. The difficulties are chiefly those which arise from severe temperature stresses, and from the complicated valve mechanism.

"It is certain, then, that the large oil engine has by no means reached its final stage of development; and we may look for some radical changes, particularly in the direction of simplifying the main constructive elements of the oil engine, in reducing the number of its parts, and in obtaining a better control of the ever-insistent problem of temperatures.

"As matters now stand, the most expert oil engine



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builders of Germany do not see much immediate hope of the installation of complete oil plants for driving the largest steamships. The most that they are willing to consider at present is the possibility of installing a mixed plant of steam turbines and oil engines, such, say, as a powerful oil engine on a central shaft with steam turbines driving the wing propellers.

"Let it be clearly understood that the above is written with the problem of the oil-motor-driven battleship and liner in mind. In the smaller powers the success has been so marked as to render certain a very large displacement of steam by heavy oil. Furthermore, some of the problems which complicate the question of large power units on the sea-say, of from 10,000 to 12,000 horse-power-are not so serious when the plant is designed for stationary service on land; and here we may look for a steady if not rapid increase in dimensions and powers."

"LLOYD'S LIST" AND "LLOYD'S WEEKLY SHIP-PING INDEX."

The following announcement, which no doubt will interest many of our readers, was recently received at our office:

LLOYD'S.

2nd October, 1913.

Dear Sirs:

I beg to inform you that on the 30th June, 1914, the agreements under which "The Shipping & Mercantile Gazette," belonging to Messrs. Spottiswoode & Co., Ltd., and "Lloyd's List," belonging to the Corporation of Lloyd's, have for some years past been published as a joint newspaper, will terminate by effluxion of time.

The Committee of Lloyd's propose then to resume the

The Committee of Lloyd's propose then to resume the issue of "Lloyd's List" as a separate daily morning newspaper, to be printed and published at Lloyd's, and all the shipping intelligence collected by Lloyd's, which has hitherto appeared in the joint newspaper, will, on and after the 1st July, 1914, be found in the new "Lloyd's List."

"Lloyd's Weekly Shipping Index" will be continued as heretofore, excepting that on and after the 1st July, 1914, this index will also be printed and published at Lloyd's.

I would remind you that the Corporation of Lloyd's is represented at every port throughout the world by a Lloyd's agent or sub-agent, and the Corporation either owns, or has working arrangements with, every important signal station and wireless station in the world.

The facilities of the Corporation of Lloyd's for obtaining chicagon in the corporation of Lloyd's for obtaining chicagon.

taining shipping intelligence are consequently unique, and all such information collected by the Corporation will be published in the new "Lloyd's List" and in "Lloyd's Weekly Shipping Index." These publications will thus contain earlier and more authentic intelligence concerning the contains and the contains a contains a contain the contains a contains a contain the contains a contains ing shipping movements and casualties than can be obtainable in its entirety through any other channel.

In addition to the ordinary maritime intelligence re-lating to shipping movements and casualties, both jour-nals will contain pages devoted to information affecting matters of interest to the mercantile and maritime com-munity in the wider and more general sense; in the form of articles and reports on all questions connected with insurance, shipping, commerce, cargoes, freights,

markets, etc.

There is thus every reason to anticipate that the new "Lloyd's List" and "Lloyd's Weekly Shipping Index"

will enjoy a worldwide circulation among all interested in shipping matters, including shipowners, charterers, merchants, consignees, underwriters, insurance brokers, etc., and that these journals will consequently form excellent mediums for advertising.

I shall have pleasure in forwarding to you in due course full particulars regarding rates for subscriptions and advertisements.

Yours faithfully,

E. F. INGLEFIELD,

Secretary of Lloyd's.

MARINE MISHAPS.

"CITY OF PAPEETE," Schr. From San Francisco for Unga, Alaska. Sprung a leak two days out and returned to this port for repairs. She resumed her voyage after repairs were made.

"GLENESSLIN," Br. Sp. From Santos for Portland, Went ashore on October 1 near the mouth of the Nehalem River and was abandoned by the crew. The wreck was sold for \$500. Charges of drunkenness were made against the master and of neglect of orders against the second-mate. License of the master was suspended for three months and that of the second-mate for six months.

"MERCED," Str. From San Francisco, October 15, for Portland. Went ashore at Point Gorda on the night of the 17th and will likely become a total loss. The steamer was valued at about \$200,000. Insured locally and abroad.

"ROBERT SEARLES," Schr. From Astoria, August 6. with lumber for Valparaiso. Encountered a gale on August 24 during which the captain was lost overboard. A part of the deckload was lost overboard. She was partially dismasted and arrived at Kahului, October 4. under jury rig. She was later taken to Honolulu and it is reported that she will be sold there.

"SIMLA," Br. Bge. From Point San Luis, September 22, for Vancouver in tow of the Str. "Washtenaw." Went ashore near Point Gorda after the steamer her-



WAS BADLY DAMAGED ON HER STARBOARD SIDE.

FIREMAN'S FUND

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self had stranded. She was floated by the steamers "Nann Smith" and "Adeline Smith" and taken by them to San Francisco. The barge was valued at about \$210,000, and the estimated cost of repairs is from \$80,000 to \$120,000. No libel for salvage has as yet been filed but the claim will probably be heavy. Barge insured locally and abroad.

"SOUTH BAY," dredging steamer. Pounded on the rocks of the jetty at Long Beach on October 7 and sunk as a result of injuries received. She is now being raised.

"SPOKANE," Str. From Ketchikan for Seattle. Was reported as having struck bottom at Cape Lazo on October 3. It appears, however, that the cylinder cover had been removed for some slight repairs and that a sea valve had been prevented from closing by some obstruction, thus allowing a large quantity of water to enter the hold. The defect was remedied and the voyage was completed without damage to the steamer.

"WASHTENAW," Str. From Point San Luis, September 22, for Vancouver with fuel oil. Went ashore on September 24, near Point Gorda, but was subsequently floated without assistance after jettisoning a part of her cargo. She returned to San Francisco. Cost of

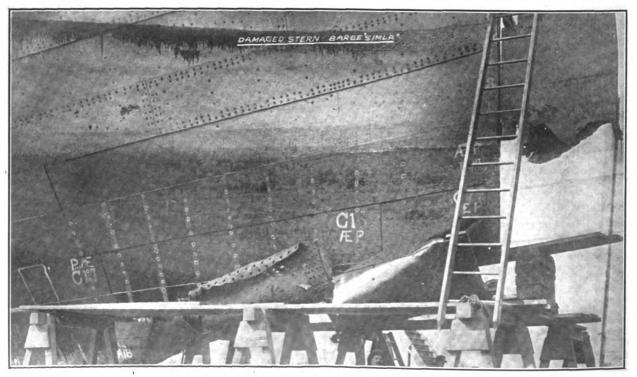
repairs estimated at about \$40,000. Steamer insured locally and abroad. She was valued at about \$190,000.

"ELDORADO," Schr. From Astoria, April 1, with lumber for Antofagasta. Has not been heard from since. She was fifteen days out. While she has not as yet been posted as missing, grave fears are entertained for her safety and she is reported as being uninsurable in the overdue market.

"THOR," Nor. Str. At Karatsu, Japan, partly loaded with coal for San Francisco. Was driven ashore on October 17 during a typhoon but was subsequently floated.

TRANSPACIFIC TRADE.

At the last meeting of the Pacific Coast-Oriental Tariff Bureau held in Seattle, and attended by representatives of eight Transpacific Oriental steamship lines, it was agreed to increase the rates on wheat and flour from Portland and Puget Sound from November 1st to following basis, viz.: \$4.00 per 2,000 lbs. to Japan; \$5.00 to Hongkong, and \$5.50 to Manila. This represents an increase of 50c per ton and is considered justified on account of the scarcity of securable space on the regular line steamers and the large quantity of wheat, flour, salmon, herring, cotton, lumber, etc., for export.



SHOWING DAMAGED STERN OF THE BARGE "SIMLA."

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ROYAL MAIL NOT YET DECIDED AS TO HEAD-**OUARTERS OF TERMINALS ON** THE PACIFIC.

It has been reported in several newspapers that the Pacific Coast headquarters of the Royal Mail Steam Packet Co., Ltd., were to be located at San Francisco and that this city would be the terminal of a steamship line from Europe. Mr. E. J. M. Nash, the U. S. representative of the Royal Mail S. P. Co., Ltd., is quoted as the authority for the above.

Mr. Nash advises us that he never made these statements and that no definite decision has been made by his company at present as to headquarters or terminals on the Pacific Coast. Mr. Nash also advises that no announcement can be made at present regarding the contemplated service of the Royal Mail, and will not be until after the opening of the Panama Canal.

ANOTHER CANADIAN SUBSIDY.

It is said that the Canadian Government has closed a five-year contract with the Royal Mail Steam Packet Company for a fortnightly service from Halifax to the West Indies, sailings to begin on November 1, 1913. The agreement calls for four vessels with 5000 tons freight capacity and a speed of 11 or 12 knots; also suitable passenger accommodations. Sailings are to be via St. Johns, New Brunswick. The subsidy granted is \$340,-655 per annum and is contributed for the present by Canada alone.

"An American merchant marine can be brought into existence without any Government aid whatever. No Government aid is needed, or wanted, other than for Congress to repeal the restrictive, injurious and unnecessary acts already in effect. If they will re-peal these unwarranted restrictions, and give the American shipowner an even chance with foreign shipowners, he will be able to uphold his own without any assistance from any Government.

> J. C. FORD. President Pacific Coast Steamship Company.

BID FOR BATTLESHIP ARMOR REDUCED.

New bids for armor for battleship No. 39 were recently opened at the Navy Department; we understand, with the result that the Midvale Steel Company was awarded the contract at a total saving to the Government of \$111,874 under the figures of bids for the same material submitted recently by the Midvale, Carnegie and Bethlehem Steel Companies.

FIRE AT SHIPBUILDING YARD NOT SERIOUS ENOUGH TO DISABLE PLANT.

The Seattle Construction & Drydock Company suffered some little damage from a fire that occurred on the 11th of October, and for a while it was feared that it would get beyond the control of the firemen, as sometimes happens when quantities of dry lumber are in the near vicinity. Very fortunately though, the blaze was soon under control, and while the damage suffered is considerable the plant was not menaced, and work was continued as usual the Monday following the Saturday when the fire occurred.

Will Congress eventually legislate all American ships off the ocean and compel them to seek refuge under foreign flags? Our members of Congress are continually helping the merchant marines of foreign countries, but what is their narrow-minded policy doing to the ships of their own country?

Mr. P. A. S. Franklin, Vice-President of the International Mercantile Marine Company, informs us that no plans have yet been made for the extension of this company's services upon the opening of the Panama Canal.

NEW WIRELESS STATIONS FOR BRAZIL.

The Marconi Wireless Telegraph Co. has been granted without monopoly a license by the Brazilian Government to establish wireless stations at different points in Brazil to receive and transmit oversea messages.

CONGRATULATIONS FOR CAPTAIN T. H. CANN.

Mr. Luther B. Dow, counsel for the American Merchant Marine Association, of Boston, in a recent letter addressed to the "Pacific Marine Review," writes:

"I am directed by our Association to write and congratulate Captain T. H. Cann, master of the S. S. 'State of California,' which recently met with such a sad fate in Alaskan waters, and to say that he was fairly and justly treated by the U. S. inspectors who rendered an opinion that was intelligent and just in every respect."

I have always been anxious to do anything in my power or the revival of our Merchant Marine, which is now pretty nearly extinct, (Signed) H. C. LODGE, United States Senator,

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NEW STATIONS FOR MARCONI WIRELESS TELEGRAPH COMPANY

Three high-powered stations for the Marconi transocean scheme are now under construction on the Island of Oahu, Hawaii, and in California and New Jersey, respectfully. Each of these developments consists of a generating station and a receiving station; the generating and receiving stations being separated by a distance of twenty-five to fifty miles. All the stations are somewhat distant from a populated or built-up district. so it is necessary to provide residences and living quarters for all the operators and employees, as well as the power buildings, aerials and other equipment that will be required in the commercial operation of the wireless service.

At each generating station the group of buildings will include a power house, auxiliary operating building, hotel to accommodate about twelve men, and one or two residences for the chief engineer and assistant chief

At each of the receiving stations the group of buildings includes an operating building, a hotel for thirtythree operators, one or two residences for the chief operator and his assistant chief operator, and a lighting plant or light and heat plant, as may be required.

The design of the buildings has been controlled by a fundamental consideration of providing a permanent type of construction and minimum charges for maintenance. Fireproof buildings have therefore been designed and are being constructed throughout with materials and arrangements varied somewhat to meet the different conditions that arise through geographical location

The buildings for the Honolulu and California developments are to be of concrete construction with solid concrete walls and reinforced concrete floors. roofs are to be supported by structural steel on which will be placed red vitrified roofing tile. The buildings for the New Jersey development will have exterior walls of brick and red tile roofs. All interior partitions will be plastered on metal lath with steel studding or terra cotta partition tile, so that the only woodwork in the buildings will be found in the windows, doors, interior trim and wood flooring, which is to be laid directly on the reinforced concrete supporting floor.

The residences are of the bungalow type with five rooms and bathroom, including dining-room, kitchen, two chambers and bath room.

The hotels for operators at the receiving stations, on the basis of thirty-five operators, will provide a room for each man; about one-third of the rooms will be of larger size than the others, and will have private bathrooms attached. Billiard rooms, card rooms, reading and writing rooms, are also provided for in these hotels.

The hotels for twelve men at the generating stations will provide similar accommodations. A refrigerating plant, cold storage room and refrigerators are to be installed in each hotel. In addition to refrigeration, these plants will be arranged to manufacture ice for domestic purposes

The operating buildings will contain the business offices for the receiving stations, including the general office, private offices, receiving rooms, instrument rooms,

On account of the isolated locations, complete water supply and sewer systems are necessary, and will be At the receiving station in the Hawaiian provided. Islands the water will be obtained from a well yielding a supply which has been found to carry a small percentage of salt. This water is entirely satisfactory for general purposes, but is not potable and it has been

found necessary to install distilling apparatus to provide a sufficient quantity of water for drinking purposes.

Complete and modern plumbing systems are to be installed in all buildings, and the sewer system will take care of all drainage, either by means of a sewage disposal plant or by conducting the drainage to a suitable point of natural disposition where available.

Electric lighting will be provided throughout all

These facilities make it apparent that each station will be an independent community, for which will be provided every convenience to be found in any city or suburban residential district. These features, together with location of some of the stations directly on the shore of the ocean or bay, as the case may be, will contribute to make comfortable and attractive dwelling places and insure pleasant living conditions for the employees at the various stations.

These stations will be used exclusively for the handling of trans-ocean traffic, and are designed so as to be operated without the least interference to the present marine business. Direct wire connections will be had with the land wire systems and traffic that is now being handled by cable will be transmitted at greatly reduced rates. Automatic transmission will be used and duplexed, i. e., messages may be sent and received simultaneously at each station. The speed of transmission will range from 80 to 100 words per minute.

Rapid progress is being made with the construction work, which is under the direction of J. G. White Engineering Corporation, as engineers and contractors for the American Marconi Company.

Arrangements are being made for the building of similar stations in Manila and at some point in Japan for communication with the Honolulu and Pacific Coast

The Marconi Company have also under way the plan of constructing stations at all important points in Alaska for the handling of commercial messages to and from Seattle. Sites have already been obtained and the apparatus ordered for a 25 KW station at Ketchikan and for a smaller station at Juneau. It is proposed to so locate the stations that messages may be handled at any time of day or night, either direct or by relay with the outside world via Seattle, and the high telegraph rates now in effect throughout Alaska will be greatly reduced.

"Last month," says Robert Dollar, "three great liners sailed from San Francisco on the same day. One of them was a Pacific Mail ship. One was a Spreckels ship. These two were American. other was a ship of a Japanese line, which has a subsidy of a million and a quarter a year for carrying the Japanese mails.

"The two American ships beat the Japanese ship to Asia. But the Japanese vessel carried the United States mail. That company has the contract, given to it by the authorities at Washington. Congress gives away the mail contracts and tries to balance up the loss by offering a little 5 per cent. discount under conditions which no shipowner can accept."



SAFETY AT SEA

As requested by the Department of Commerce, we have answered the questions relating to the "Bulkhead Subdivision of Vessels and Other Structural Features Affecting the Safety of Ships at Sea." As a great many of our readers are no doubt interested, we publish these questions, with our answers thereto, which are intended primarily for the assistance of the Department of Commerce in preparing suggestions for such representatives as may be designated to represent the United States at a proposed international conference on "Safety of Life at Sea."

Vessels Engaged in Transatlantic and Transpacific Trade.

Ia. Large passenger steamers carrying passengers, baggage, mail, and express.

Ha. Steamers engaged in carrying both freight and passengers, but of such character that they must be regarded primarily as passenger vessels.

Steamers engaged in carrying freight only or freight and some passengers, but of such character that they must be regarded primarily as cargo vessels

Vessels Engaged in Coastwise and Ocean Trade Other Than Those Embraced in Questions Ia, IIa and IIIa.

Ib. Large passenger steamers carrying passengers, baggage, mail, and express.

IIb. Steamers carrying both freight and passengers, but of such character that they must be regarded primarily as passenger vessels.

IIIb. Steamers carrying freight only or freight and some passengers, but of such a character that they must be regarded primarily as cargo vessels.

With reference to the questions prepared by the Bulkhead Committee and considering the six types of vessels, the "Pacific Marine Review" would make no distinction between purely passenger ships whether engaged in the transoceanic trade or the coastwise trade and we believe that the maximum restrictions tending to safety should apply.

For purely freight and cargo vessels, no restrictions should be added over the present rules and regulations, these tending more for the protection of cargo. To add more restrictions will place the shipowner in a more difficult position and he is already being pressed from all directions. The policy should be to encourage rather than discourage this class of trade.

As for the intermediate classes, passengers and cargo, we believe that with restrictions placed on these vessels to insure the safety of vessels and passengers, that the type will tend to disappear and there will only be left the wholly passenger and wholly cargo vessel. With the bulkhead subdivision necessary for adequate protection, the vessel is not suitable for cargo of other than a special character.

Question No. 1. In order to insure safety at sea it is one of the first principles of design that the vessel should be seaworthy under all conditions of weather when loaded to a certain maximum draught, and that such a vessel should not be loaded so as to have freeboard less than a certain designed minimum. What is your opinion as to the advisability of prescribing by law or regulation this maximum draught and minimum freeboard for all classes of vessels?

Answer. The maximum draft or minimum freeboard, either one of which would be sufficient to prescribe should be regulated by law and should be considered in each individual case having due regard to the trade or service in which the vessel will be employed.

Question No. 2. What is your opinion as to the ad-

visability of providing by law or regulation standards of hull construction, and how far should the rules of classification societies be recognized in matters pertaining to scantlings, structural arrangements, stability, and freeboard?

Answer. The rules of the classification societies provide scantlings which give ample strength for the worst case possible to imagine. In many cases it would be possible to reduce the scantlings considerably and still have sufficient strength. Classification rules, however, do not provide for the necessary progress of the age and any special type of vessel has to be considered on its merits. The rules of the classification societies do not in many special cases provide for the best distribution of material to obtain the maximum strength with minimum material. It appears evident, therefore, that while the rules of a recognized society will give ample strength it would be unnecessary to further regulate the scantlings, but leave it entirely to them. As for standards of construction, that depends entirely on the watchfulness of the Society Inspectors and as the personal element enters into this so strongly it would appear that the ample margin of strength referred to above would, in many cases, be offset by bad workmanship.

The only method that presents itself for obtaining standards of construction is for the Government to bring into use its trained force of inspectors educated for this special purpose, but to do so would increase the cost of construction to a prohibitive amount, unless the Government assumed the cost of the inspection, and even in that case the mere fact that government inspection was required would be sufficient to send the cost of the vessel soaring. By government inspection we refer to naval inspection, for which a staff is maintained at every shipyard building naval vessels. In view of the cost, therefore, we hesitate to recommend any change in the requirements of construction, but rather stick to the classification requirements on all points involved in this question.

Question No. 3. Should the rules of classification societies be passed upon or given official recognition by a department of the Government acting with discretionary authority under the general laws relating to such subiects:

Answer. We believe that the rules of all classification societies should be passed upon and if satisfactory given recognition by a department of the Government vested with the necessary authority and we would further require all plans and specifications for vessels of classes Ia and Ib, IIa and IIb to be submitted to that department for approval in order to further protect the traveling public, leaving classes IIIa and IIIb entirely in the hands of the classification and insurance societies. The object is to provide all possible protection to passengers when traveling on vessels devoted entirely to passenger traffic.

(To be continued.)

The contract for the proposed wharf at Vancouver, B. C., has been awarded to Messrs. Henry, McFee and McDonald, of that city, at a cost of \$1,250,000.

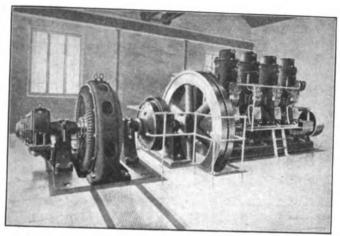
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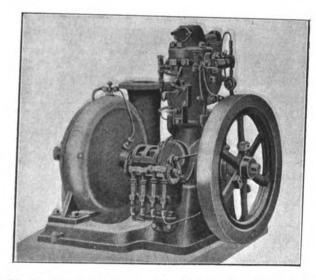
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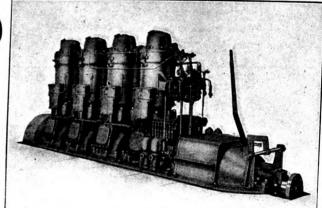
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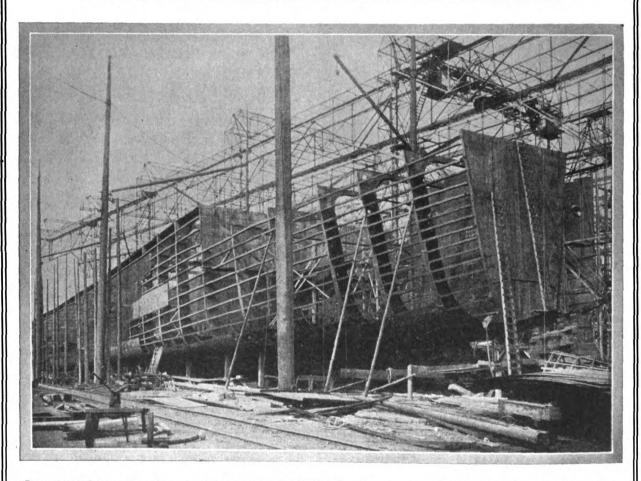
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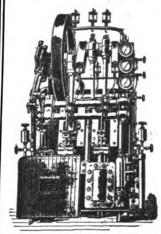
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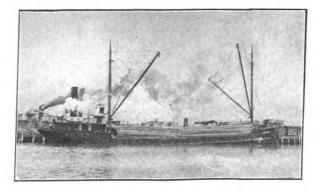
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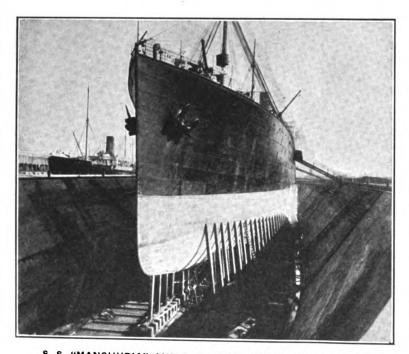
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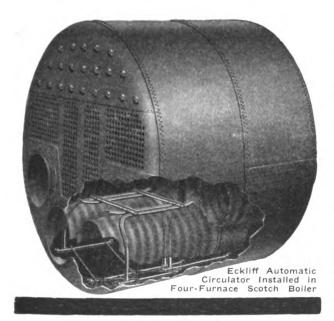
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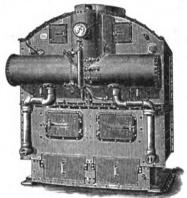
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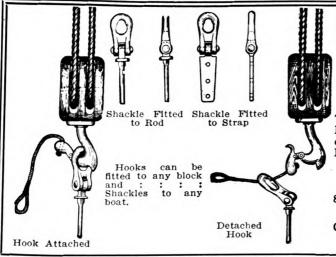
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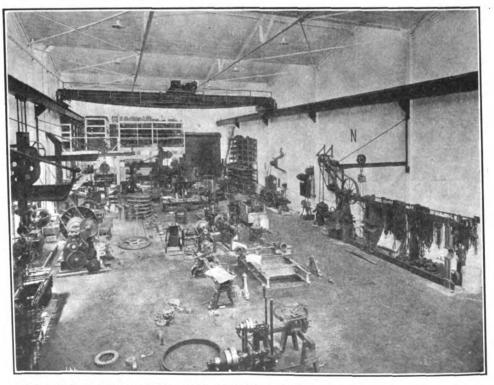
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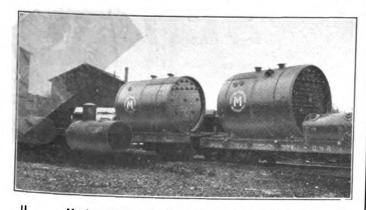
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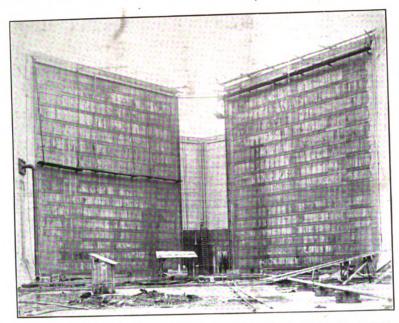
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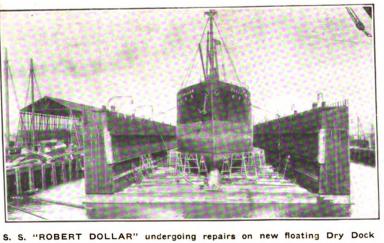
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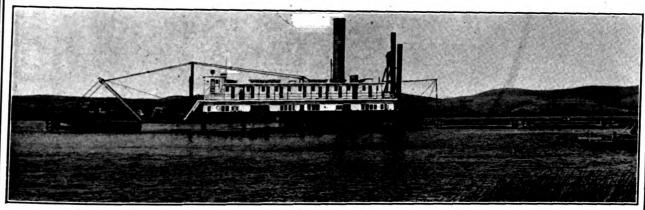
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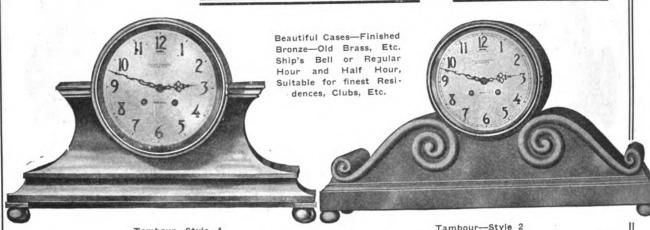
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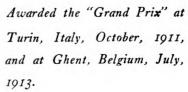


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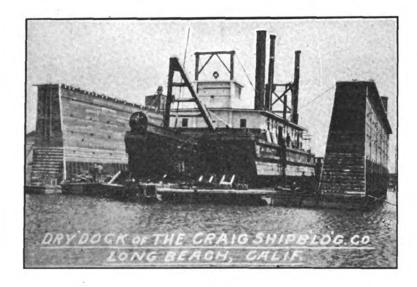
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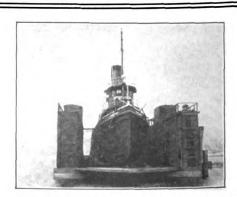
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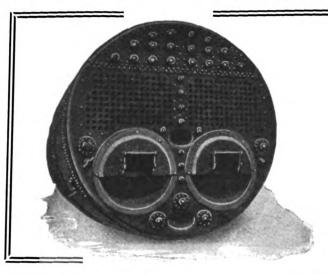
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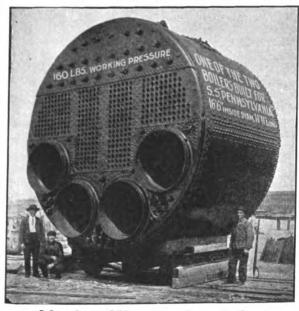
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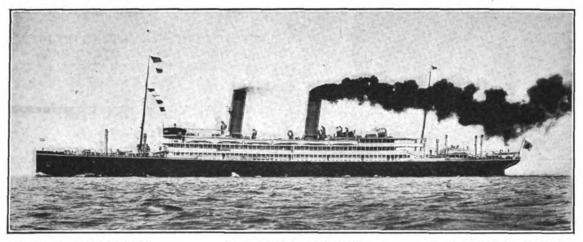
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VOL. X. No. 12.

SAN FRANCISCO, CAL.

DECEMBER, 1913.

SENATE BILL 136

O Promote the Welfare of American Seamen in the Merchant Marine of the United States, etc., which passed the United States Senate Thursday, October 23d, if it becomes a law may, in connection with the laws of the United States pertaining to immigration and Chinese exclusion, deliver the entire over-sea traffic between Pacific ports of the United States and the Orient to the ships of the Japanese merchant marine.

It does not seem possible that the framers and promoters of this bill could contemplate so disastrous a result, and, yet, from a study of the different requirements of the bill, it appears that the conditions to be complied with are such that only the Japanese steamship lines, officered and manned by Japanese, all speaking a common language, heavily subsidized by the Japanese Government, can fully and easily meet all the requirements without losing any of their present economic advantages through low wages, etc.

Its effect, therefore, would not only result in the actual disappearance of the six American steamers now operating in this trade, but also, would prevent the ships of any other nationality entering the trade through inability to comply with the terms of the bill, as shown later. This would give to the ships of Japan an actual monopoly of the trade beween Pacific Coast ports of the United States and the Orient.

Briefly, the reasons for supposing that this would be the effect of the bill are as follows:

First.

All steamships operating in the transpacific trade are officered by citizens of the country under whose flag the vessel operates but are manned in the different departments, by Chinese or East Indians, with the exception of the Japanese lines, two of which are manned wholly by Japanese and one partially by Japanese and Chinese.

The bill provides that no ship of any nationality, "shall be permitted to depart from any port of the United States unless she has on board a crew not less than seventy-five per centum of which, in each department thereof, are able to understand any order given by the officers of such vessel, nor unless forty per centum, in the first year, forty-five per centum, in the second year, fifty per centum, in the third year, fifty-five per centum, in the fourth year after the passage of this act, and, thereafter, sixty-five per centum of her deck crew, exclusive of licensed officers, are of a rating not less than able seamen."

It would be impossible for those ships, of different nationalities, now operating with European or American officers and manned with Asiatic crews, to obtain such crews, seventy-five per centum of which, in each department, would be able to understand "any order" given by the officers of such vessels. It might be possible to obtain Oriental crews for the deck force and for the commissary department in which at least seventy-five per cent., if not more, would understand any lawful order which might be given them by their officers, but it would be absolutely impossible to obtain such men in the fire room force, which is the largest department upon any ocean-going steamer.

A set of firemen or coal passers who would understand the English language, or the German language, or the French language, or the Spanish language, is not to be found, so that this language qualification of the bill would prohibit ships of other nationalities engaging in this trade with Oriental crews as well as ships under American registry, while it would not apply to Japanese ships, officered and manned solely by Japanese, where the entire ship's company speak a common language, and so in every respect complying with all the terms of the bill.

That portion of the bill which pertains to the per centum of able seamen, quoted above, is easily filled, as there are as many able-bodied competent men among Japanese seamen as among any other race in the world. The Board of Local Inspectors, who "shall issue to applicant a certificate of service, which shall be retained by him and be accepted as prima facie evidence of his rating as able seaman," would only be competent to examine Japanese sailors as to their ability for this rating through interpreters. The Japanese could not be deprived of his right to a certificate if, through an interpreter, he clearly demonstrated the fact, in every respect, that he was an able seaman, entitled to a certificate giving him the right to serve as an able seaman on a Japanese ship under the terms of this bill. Therefore Japanese crews would meet wholly the language requirements of this bill.

Second.

It was undoubtedly the intention of the framers of this bill that the treaty conditions of "the arrest and imprisonment of officers and seamen deserting, or charged with desertion from merchant vessels of the United States in foreign countries and for the arrest and imprisonment of officers and seamen deserting, or charged with desertion from merchant vessels of foreign nations in the United States and the territories and possessions thereof and for the co-operation, aid and protection of competent legal authorities in effecting such arrest or imprisonment," is to terminate, and that the crews of foreign ships entering United States ports would have the right to "receive within forty-eight hours after demand therefor from the master of the vessel to which he belongs, one-half part of the wages which shall be due him," and, after receiving such wage, leave his ship, without regard to any of the laws of his own country under which he may have shipped for a round voyage, and without fear of arrest and imprisonment under the charge of desertion, as such charge under the terms of this bill ceases to exist. No foreign consul will have the right to enforce the shipping articles under which the man may have shipped in a foreign port and from which the bill releases him in an American port.

Under the immigration laws of the United States a sailor is not considered an immigrant and he therefore has the right to come ashore under the rules and regulations established by the Department of Labor and remain in American territory a reasonable time during which he may reship and depart from the United States. Therefore, crews from foreign ships have the right to leave their ship, disregarding the terms of their shipping articles, and remain in America until they have either reshipped, at higher wages, upon the ship they had just left, or have drifted to employment on the ships of other companies.

The Chinese Exclusion Act and the agreement with the Japanese Government would seem to put an entirely different phase on the condition of the Chinese or Japanese sailor who desired, under the provisions of this bill, to disregard his shipping obligations, abandon his ship and come on shore at an American port, in order to demand higher wages for his services on the return voyage or to seek employment on some other ship.

It is a question if there would not be a grave difference here between the rights of the European sailor, under the general immigration law, and the rights of the Oriental sailor, under the Chinese Exclusion Act, and it is doubtful whether the Department of Labor would permit Oriental sailors to come ashore in large numbers in Pacific Coast ports and these men to remain in port until such time as they saw fit to reship. If these men were permitted to come on shore it would be difficult to get them out of the country, except by deportation under the Exclusion Act and at the expense of the Government.

By the terms of this bill, an arrangement among the officers of the International Seamen's Union would place the control of the crews of all ships under the charge of these leaders and the crews would be instructed to demand "the half wages due," under the terms of the bill, abandon their dutise, come on shore and the ship would have to remain in port until a new crew were provided or the old one reshipped, of course at very much higher wages than those at which they were originally shipped.

The bill is a device to assist members of the crew in all departments to obtain higher wages. But it is doubtful whether the Japanese sailor would affiliate with the international organization and, in view of the paternal interest of the Japanese Government in the ships and personnel of the Japanese merchant marine, it is reasonable to suppose that the Japanese Government would counteract any action of this kind by immediately enact-

ing a law making it a criminal offense for a Japanese sailor to desert his ship in a foreign port. The Japanese sailor would not dare avail himself of this provision of the bill to advance his wages, fearing imprisonment on return to his own country.

It is therefore apparent that the owners of Japanese ships will be able to comply with all the provisions of this bill and, at the same time, their crews would be exempt from any advance of wage over that at which they had signed in their home port, nor could their crews be disturbed by labor agitation.

Third.

It is a well known fact that the ability to meet competition depends largely upon efficiency and economy of operation. Wages are a prime factor in operation. The wages of seamen out of Oriental ports are lower than the wages of seamen out of any other ports in the world. The wages of European seamen out of Pacific Coast ports, in the different departments of the ship, will vary from \$40 to \$55 per month United States gold, while the wages of Oriental seamen out of Oriental ports will vary from \$7.50 to \$9 gold. The cost of feeding the European sailor is 55 cents per diem; the cost of feeding the Oriental sailor is 13 cents per diem. From this it must be apparent that there is a vast difference of economy in the operation of competitive vessels, in the same Oriental trade, where one is manned by men who receive the Oriental wage, as against the ship which is manned by men who receive the European wage.

If this bill in plain language stated that no American ship could carry other than an American crew, in all departments (which it does indirectly), it would say, in so many words, that the American ship, in so far as transpacific trade is concerned, must go out of business, because it is apparent that, with equal rates on freight and passenger business, it could not meet the competitive conditions of the Japanese ship, which would have not only the benefit of the cheaper cost of operation, with the cheaper paid crew, but the patriotic aid and assistance of the Japanese Government and Japanese travelers and shippers, as well as the most generous subsidies to all their lines, ranging from \$238,000 to \$1,340,000 gold per annum.

So much for the American ship. Would it be any more feasible for European shipowners to operate ships on the Pacific in competition with Japanese ships if they were compelled to man their ships with European crews and meet the competition of the cheaper operated and subsidized Japanese ships, with the continual loss of their crews in American Pacific Coast ports. The venture would be entirely too doubtful and, therefore, it is apparent that the field is left open entirely and exclusively to the Japanese shipowner, the American and foreign ships having been put out of business by the impossible terms of the bill.

Final.—It must be singularly painful to contemplate, that under the condition of this bill, so far as transpacific traffic is concerned, the so-called American or European sailor is not to be benefited, that the European shipowner cannot participate in this trade, either with Asiatic or European crews, that the American ship must cease to exist on that ocean, and that this entire transpacific traffic between Pacific Coast ports of the United States and the Orient must of necessity, under the conditions of the bill, pass to the Japanese subsidized lines, giving them the sovereignty of the Pacific Ocean for which they have long sought.



A FOREIGN-BORN AGITATOR WHO HAS MADE GOOD WITH THE UNITED STATES SENATE.

Andrew Furuseth, representative of the Seamen's Union, in an effort to secure legislation improving the condition of sailors, gave out a statement attributing part of the loss of life on the "Volturno" to the inefficiency of the lifeboat men. "The prominent fact in connection with the loss," said he, "so far as the information is at present available, is a lack of skilled men to handle the boats. The one supreme test of skill in a seaman and the one most important to the passenger is the seaman's ability to lower a boat and get her away from the side of the vessel when a gale is blowing."-Baltimore American.

It is a very difficult matter to refer to this foreignborn agitator temperately when he criticizes those who have been unfortunate at sea but have met disaster. as seamen do, bravely and promptly, endeavoring to extricate their vessel from the peril that has befallen it, first looking to the safety of passengers under their care. At the time the above statement was given to the press, this person, of whom we have no record for sea service, knew no more about the conditions that existed on board the "Volturno" in regard to the crew and their ability to handle the ship's boats than that other present troublesome foreign agitator, Mrs. Pankhurst. And if this famous libeler of everything that pertains to the ship and its personnel can read, he has already been informed by the captain of the ill-fated ship that her crew under these most trying conditions were brave and efficient. And not a single report has been received from any of the ten ships that went to the relief of the "Volturno" that there was any apparent lack of discipline on this ship, notwithstanding the terrible conditions that were met.

What have the maritime interests of the United States and Europe done to this Administration and Congress that they should harbor, listen to, and advise with a person who spends his time in Washington for pay to agitate against shipowners and operators pursuing their important calling and in the meantime minding their own business in serving ocean travelers and shippers to the best of their ability? Anywhere outside of an American Congress a man who represents an irresponsible organization of men, irresponsible because they dare not become incorporated and thereby amenable to law, and is pleading for a statute whereby a seaman can after signing articles break his contract in any port, whether his place can be filled or not, would not be tolerated for a moment.-N. Y. Marine Journal.

The great and growing commerce of the United States has long been monopolized by foreigners; in 1911 no ship bearing the American flag entered the port of London, and in 1910 none visited Havre or Marseilles. \$600,000,000 are paid annually by the people of this country to foreign carriers. Any war involving European nations would paralyze American trade because of lack of a sufficient supply of neutral vessels to carry the commerce.

Still with the great and growing need for a merchant marine, we are confronted with discouragement right along, instead of the encouragement we are now, more than ever before, in such need of. If S. 136 passes, it will probably do more than cripple what remains of shipping under the American flag.

My Uncle Sam he says, says he, "By Gosh, I've got a notion, That I've a right as well's John Bull To sail the briny ocean.

"I'm Captain of the Ship of State, By heck I'll make her go, sir, In spite of mincing Jean Crapeau, And Kaiser Bill de Grocer.

"It seems according to report I've still nine steamers running, That ain't enough to tote the grub Should we uns go a gunning.

"I'm tired of giving laws a trial Before a fixed up jury, want results, that's why I'm here, Your Uncle's from Missouri.'

Then Congress answered with a smile "Why, this old geek is hazy, Let's take his last nine ships away And watch the fool go crazy.

ANOTHER UNFORTUNATE PHASE OF THE SEAMEN'S BILL.

One very important result of the proposed Seamen's Bill will be that in passenger-carrying vessels the number of seamen will, in nearly every case, be greatly increased. In fact, so much so that the added expense will prove fatal to the successful operation of many steamers. It is scarcely a year since the equipment of lifeboats and life-rafts was raised to its present rating. Now it is proposed that two able-bodied seamen be carried for each boat and that all rafts are to be discarded and lifeboats installed in their place.

As an example of the working of this Seamen's Bill, we will take the SS. "Congress" which has just taken her place in the Pacific Coast passenger and freight service. This vessel carries fourteen lifeboats and fourteen liferafts all of the latest type, in fact the liferafts were built from entirely new designs and were pronounced by the Steamboat Inspectors of Philadelphia and New York to be the best ever fitted to any vessel. These rafts and boats are installed to be handled by mechanically operated davits and there is no skill required to Under the proposed law all of hoist or lower them. this outfit would be discarded, though less than a year old, and arrangements made to carry twenty-one boats. These twenty-one boats must each have two able-bodied seamen and, as the new law would exclude all the crew from this service except five officers, four quartermasters and the boatswain, thirty-two seamen would be required instead of the twelve now carried. The twenty extra men would be in effect twenty professional loafers, as there would be nothing for them to do that could properly be termed "Work." The "Congress" carries 170 of a crew, the majority of whom are as capable of handling boats as the men who rank as able-bodied seamen.

The case of the "Congress" is by no means the worst instance that might be cited, but it is a fair illustration of the conditions that will prevail in Pacific Coast shipping if this ridiculous measure should become law, which



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is likely to happen unless some power stronger than the Sailors' Union is on hand to stop it.

If the Seamen's Bill becomes effective, where are these "expert seamen" to come from? Is it expected that with the demand that will be made for experienced seamen that they are to immediately materialize, "out of the nowhere into the here"? We have few capable seamen in our midst now, and I, for one, am at a loss to know where the efficient men S. 136 provides for are to be

AUSTRALIA'S LAWS AS COMPARED WITH THE LA FOLLETTE BILL.

The laws of Australia are made by labor union men and having practically no opposition they can make them to suit themselves, but a comparison of these laws with our own, show that ours are far more severe on shipowners. In fact, it shows conclusively that if the La Follette bill goes through the House that our laws will by all odds be the most drastic of any nation.

Our laws are framed to do as much harm to the ships of other nations as possible without any corresponding benefit to ourselves. Our lawmakers forget that we have no ships to carry our foreign commerce, and any extra expenses they may cause foreign vessels to pay must result to the detriment of the American public who will have to pay increased freight rates.

To illustrate what is meant: sometime ago a Congressman told Captain Robert Dollar, a shipowner of this port, that he had a bill prepared to make all foreign ships pay a tax of \$2.00 a ton on the freight carried. Captain Dollar replied: "If we are carrying freight from the Orient for \$2.00 a ton and this tax is put on, the rate to the public would be \$4.00-\$2.00 for the ship and \$2.00 to the customs." Any exactions the La Follette bill puts on foreign shipping will result in the American public paying for it. The foreign shipowners are, therefore, not financially interested in Senate Bill 136. They are interested, however, in the unreasonable and unjust exactions that benefit no one, and do great harm.

The steam tonnage of the world is over 26,000,000 net tons. The United States has in the foreign trade about 500,000, which is less than 2%, and we take it upon ourselves to make laws for the 98%. Our laws are beneficent in that they make all provision for the proper treatment of our seamen, but at the same time our laws make it impossible for any American to operate a vessel under them. Therefore, we are providing for the sailors but are providing no ships for them to sail in, and until our laws are changed no American ships will ever be built to engage in the foreign commerce.

In comparing the Australasian laws with the provisions proposed in Senate Bill 136 and also those now in effect in our country, the following are some of the salient points observed after casually glancing over the two countries' laws:

Australia and other nations have not taken upon themselves the responsibility of nullifying agreements pertaining to the navigation of foreign ships made in their own country.

The American law, if Senate Bill 136 passes the House, will provide that every seaman shall receive half his wages in any port at which he may call. The sailors calling in foreign ships at American ports can desert and the foreign ships' articles will thus be abrogated on arrival at a United States port.

The food allowance in Australia is not nearly so good as on American vessels. The bill of fare showing the food furnished crews on the Pacific Coast is better than that furnished workmen in any country.

Senate Bill 136 provides that if the officer of a ship who has committed a crime on board escape, the captain shall be punished for the officer. Such a drastic law is unknown and unheard of in any other country.

According to Senate Bill 136 allotments to families are not to be allowed unless the parties to them appear before the commissioner. As a result of this provision, those families residing in distant countries can not get their allotments, thereby working a great hardship. All other nations allow allotments without parties being present. Australasian laws are the most liberal in this and other respects.

If Senate Bill 136 becomes a law, the Collector of Customs may, upon his own motion, and SHALL, upon the sworn information of any citizen of the United States setting forth that the law has not been complied with, refuse clearance of the vessel. In this connection, any irresponsible citizen can tie up the largest ship affoat for twenty-four hours pending investigation.

The following sections also make interesting comparisons:

Australia.

Sec. 15. The holder of a second-mate's foreign-going certififoreign-going certificate may ship as first-mate of a coast-trade ship. Division 5 provides that apprentices shall be bound and indentured.

Sec. 41. A seaman shall not be permitted to engage in any capacity unless he satisfies the superintendent that he can pull an oar and handle a boat.

Sec. 103. No person shall by any means whatever persuade a seaman or apprentice to commit any breach of his agreement; penalty £20.

Sec. 107. On complaint of a master, or mate, or owner or agent of a ship, that any other ship (British or foreign) has on board any seaman who has deserted from the first-mentioned serted from the first-mentioned ship, any justice or officer of customs or police, may detain the seaman and lodge him in safe custody until he is dealt with according to law; provided, that the seaman shall be so dealt with as soon as possible.

Sec. 108. Every superintendent shall exhibit in his office a list of Sec. 108. seamen, who, to the best of his knowledge and belief, have deserted or failed to join their ships after signing the agreement.

Sec. 110. When a seaman be-longing to a foreign-going ship is imprisoned on summary conviction for any term, and his ship is about to leave Australia before the expiration of his sentence, the Minister may, with the consent

United States.

Not allowed.

By the La Follette bill he must have served three years at sea. The Ausat sea. tralian method the only practical way and was incorporated in the Burand Nelson

This clause is rejected in the La Follette bill but was contained in the Burton bill.

After the La Follette bill goes through no man can be brought back to a ship.

This is prohibited and is called the black list.

In all the sea-men's bills before Congress imprison-ment for desertion has been abolished.



Australia.

of the seaman, cause the seaman to be delivered to the master of the ship at any time within twen-ty-four hours before sailing and the master shall keep the seaman on board under custody till the ship has left port.

Sec. 121. A cook must possess a certificate of competency or he can not ship.

Sec. 136. Seamen to have a space of 140 cubic feet. (This extra space is given on account of sailing in the tropics.)

Sec. 145. No person, not being in the King's service, or not authe king's service, or not authorized by law shall go on board any ship which is about to arrive, is arriving or has arrived at the end of her voyage without the permission of the master, before the seamen lawfully leave the ship at the end of this arrival. the ship at the end of their engagement, or are discharged (whichever last happens), or remain on board a ship in Australia after being warned to leave by the master or by a police officer or by an officer of customs. Penalty £20 or imprisonment for six months. six_months.

Any officer of the ship or of the customs or police may take any offender under this section into custody and cause him forth-with to be taken before a proper court to be dealt with.

Sec. 388. No person (other than an official or a person duly authorized by the Minister) shall without reasonable excuse or the permission of the master go on board or remain along side or hover near any ship in any port during the night.

Sec. 178. If any seaman is absent from his duty without leave whilst his ship is within Australia, any justice upon complaint on oath may issue his warrant for the apprehension of the seaman, and thereupon may, at the request of the consul of the country to which the ship belongs try to which the ship belongs and on proof of the absence without leave, order the seaman to be conveyed on board the ship, or delivered to the master or mate of the ship, or to the owner of the ship or his agent to be so conveyed.

Sec. 179. Offense—For desertion, a penalty of £20; for assaulting any officer, three months' imprisonment or a penalty of £20; for wilful disobedience to any lawful command of an officer, a penalty of £10.

Sec. 180. The Minister may order any seaman sentenced under this part of this act to be put forcibly or otherwise on board his ship, and the master, therefore, shall keep the seaman in custody till the chie the left port till the ship has left port.

United States

No provision for this in American law. We should have it.

120 feet is required.

We had this law in California until last year. Now delegates can go on board ships and induce the men to desert without the master being able to prevent it. A person may not forcibly enter your house but by our laws they can forcibly go on board of your ship.

We should have this law.

This is all abolished by any of the bills before Congress.

Punishment any of those offenses can not be enforced.

Can't be done.

Australia.

Sec. 182. No person shall knowingly harbor or employ any seaman who is illegally absent from duty. Penalty, £20 for the first offense and £50 for a second or subsequent offense. or subsequent offense.

Sec. 187. This part of this act shall apply to all ships, British or foreign.

Sec. 188. The Governor-General Sec. 188. The Governor-General where he is satisfied that the laws and regulations of any country relating to any subject matter dealt with in this part of this act, are as effective as the provisions of this part of this act relating thereto, may by proclamation direct that (subject to such conditions, limitations and exceptions as are expressed in the proclamation) on proof of a ship of that as are expressed in the proclamation) on proof of a ship of that country having complied with those laws and regulations, she shall not be required to comply with the provisions of this part of this act relating to that subject matter; provided, that this section shall not apply in the case of a foreign country in which it appears to the Governor-General that reciprocal advantages are not extended to British ships.

Sec. 231. Except as prescribed every foreign-going ship, Australian-trade ship, or ship engaged in the coasting trade, carrying fifty or more persons, including passengers and crew, shall, before going to sea from any port in Australia, be equipped with an efficient apparatus for wireless communication in good working communication in good working order in charge of one or more persons holding prescribed certificates of skill in the use of such apparatus.

Sec. 390. Upon complaint on oath by the master of a ship in port that any person, belonging to, or employed on, or being

about, or upon the ship—

(a) is insubordinate; or
(b) refuses to work; or
(c) is inciting any other person to commit offense against this act, any police, stipendiary or special magistrate of the common-wealth or of a State may cause such person to be apprehended by any police officer and brought before him.

ANNOUNCEMENT.

In the January issue of the "Pacific Marine Review" our first protest will be launched against the Compulsory Pilotage Law now in effect at this Port.

No stone will be left unturned, as we intend to continue this fight until we succeed in convincing the State Legislature of the absolute necessity of rescinding this unessential and burdensome law.

We ask the assistance and co-operation of all shipowners and masters interested and trust they will send us their views concerning this important subject.

We realize what a difficult task we are undertaking, but we are going into this fight in the most earnest manner and feel very optimistic at the prospect of abolishing compulsory pilotage in the finest harbor on the Pacific Coast.

United States.

No such regula-tion on American ships.

The La Follette bill is arbitrary and makes no such provisions.

Under American law two operators must be carried where 50 or more people are on board. One is all that should be carried on freight steamers.

No such law in the American stat-utes although this is much wanted.

TYPES OF CARGO TRANSFERRING MACHINERY. THEIR PRACTICAL APPLICATION.

By H. McL. HARDING, Consulting Engineer, Freight Terminals, New York.

Before describing the different types of machinery for transferring miscellaneous cargoes or package freight at marine terminals, the descriptions and the practical applications will be clearer, if it be thoroughly understood in what the work will consist, and what are, or will be the operating conditions.

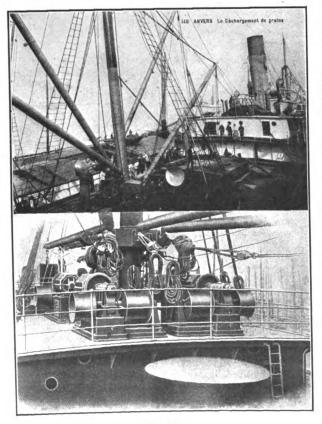
Terminal Requirements.

To condense the terminal requirements into the simplest Anglo-Saxon wording, would be that the machinery must pick up anything from anywhere, carry to anywhere, and to place anywhere, and do it quickly; that is, to hoist from the hatchway, deck or side-port-gangplank of the steamship, from the deck or open hold of the barge, lighter or river craft, from the pier, quay, or side-door of the railway car, or even from the dray areas or warehouses, assort, convey and distribute (including tiering), to and from any of the above places. To accomplish slowly the above movements will not suffice. There must be the utmost, intense rapidity of all movements, free from congestion.

The operating expenses, including interest on the machinery, maintenance, amortization, labor, oil and supplies, must be far less than handling the freight by manual labor, even though there should be a much greater rapidity.

Negative Requirements.

There are also some things which should not be done. Too costly freight-holding-floor space of the transshipment shed, adding the expense for the contributing elements, such as for the land and substructures, for the piers, quays, superstructures, warehouses, connecting rail-



No. 13.

A. Four Burtoning Booms.
B. Method of Attaching Booms to Mast and the Ship's Winches.

way tracks and the many other terminal outlays, such floor-space is, probably, as expensive as any in the world. As little as possible, therefore, of this valuable floor-space should be reserved for any purposes, except for short time-holding and unavoidable floor-movements.

The "to and from anywhere" should be direct. There must not be rehandlings, stoppages, as these cause unnecessary expense, produce congestion and prevent a continuous succession of movements.

Space For Movements.

From the above, it is also evident, that for package freight of every variety of the usual shipping sizes or



No. 1.

This pier shed in New York Harbor is considered "a full shed," No more freight will be received, though overhead there is plenty of unoccupied space. The expense of tiering is often 15 to 20 cents per ton. The drayman wants the boxes to the left near the side door. This, due to the congestion, means rehandling. The hand barrow is enclosed within a barricade of boxes and bags.

dimensions, weights and character, that much space will be necessary for their handling and such space is always limited.

From this last requirement, large cubic contents might be the cause to prevent the necessary daily transferring capacity. A box of hats 5'x5'x6', weighing only 100 lbs., may, due to the size, constitute a load, and twenty such boxes to the ton would require twenty trips, unless four or more were conveyed at one time. To handle or store a ton of such boxes requires much room. A long pipe, with angles, twenty or thirty feet long, may be all that one carrier can convey, not on account of weight, but length; possibly two carriers combined would be required. Provision should be made for cubic feet as well as tonnage.

"Anything and anywhere," regardless of levels or grades, is a most exacting statement, and yet it is not too broad to fulfill the inexorable conditions of speed and economy.

Engineering Practice as to New Machinery.

In the engineering practice of Europe and the United States, there is a marked difference.

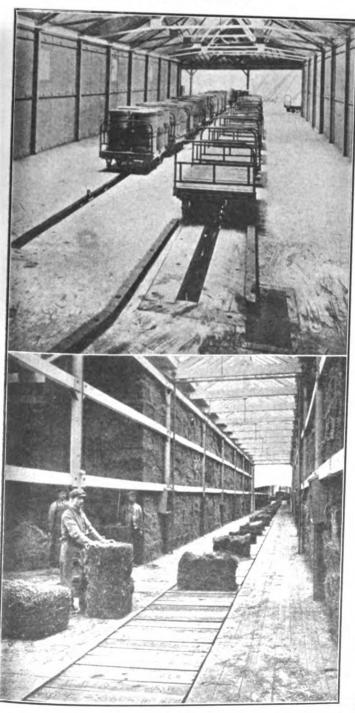
The executive abroad decides what he wants done, has preliminary specifications prepared by his own engineers, and then after numerous consultations, has exact speci-



fications drawn by experts, and after conferences with the manufacturers, the machinery, under rigid guarantee, is built to fulfil the requirements.

In the United States, possibly, from lack of confidence in their own engineers, the manufacturer is first asked what he has in stock or on his shelves. Too often, stock machines have been installed, which were not adapted to the work, because they had been constructed, it may be for other work, while if a machine had been rebuilt or a new machine designed, much better results would have been secured, although the design of the layout is often more important than the mechanism.

In case of this, cargo-transferring machinery, only standard existing machinery, chiefly of foreign manufacture, will be illustrated and described.



No. 2.

Slot and platform conveyors. Valuable for special service.

Deficient in assorting, distributing, tiering and serving all space.

Require floor space and rehandling.

Diagrams, supplemented by photographs, are given with concise descriptions.

Best Location for the Machinery.

It is evident that at terminals such machinery must operate either below the ground, at the surface, or overhead.

If the machines be operated in the unoccupied space overhead, in the same place as the overhead shop-crane, with which all are familiar, it is in accordance with the best practice.

The following views make clear the congestion of the

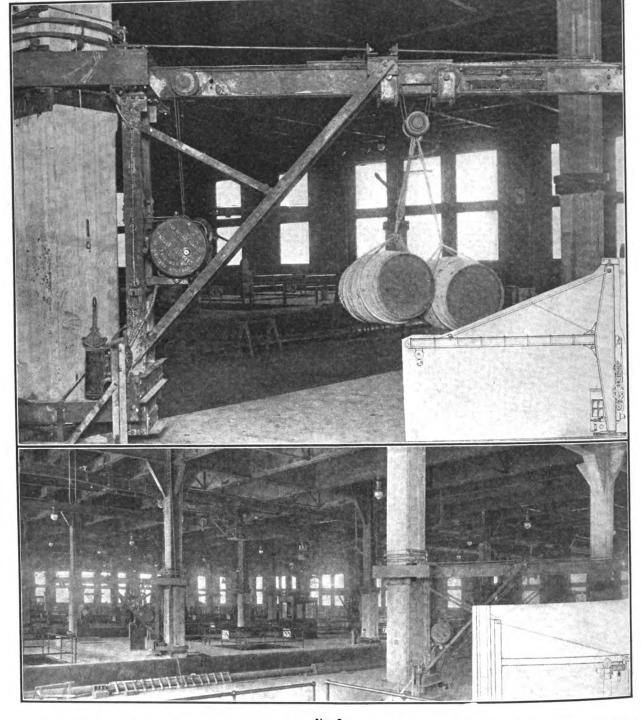


No. 8.

A. The Tractor and two Carriage-Hoists.
The Tractor is the conveying power—the Carriage-Hoist the lifting. When there are four Carriage-Hoists the Tractor is in the center.

B. Mechanical and Electrical Details of the Tractor and Carriage-Hoist, showing the controllers, motor and brakes. The I-Beam and T-Rail track.

floor space of a package freight pier of the New York City waterfront where manual labor handles the freight. Here there is no place for floor movements.



No. 3.

Twelve of these stationary jib cranes were installed for handling packet-freight but never used. The lower view shows the cranes in position. A conspicuous example of wrong adaptation of holsting machinery, as the cranes are excellent in themselves, mechanically and electrically, and would give excellent results elsewhere.

Photographs and Diagrams.

As mechanical lifting and lowering is of the first importance, more so than the conveying, the first views are of machines which hoist, and then those which both hoist and convey.

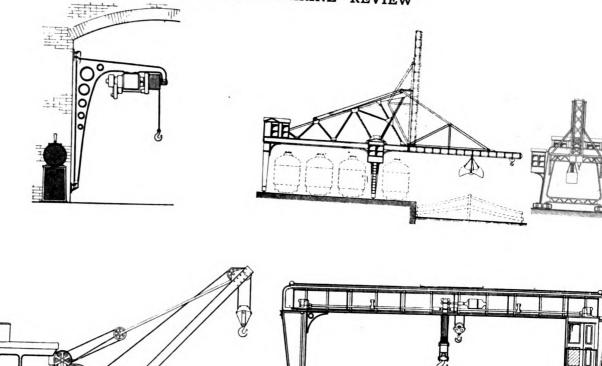
It also seemed best, on account of the short space of an article, to describe those machines which are the more universal in their adaptation, and which are chiefly employed in miscellaneous cargo-transference.

There are, however, two views of floor conveyors, one of the slot and the other of the platform type, to indicate the necessity of having to lift, by manual labor, the loads upon the trucks or the platform, and similarly to remove them at the end of the movements.

As used, they are giving excellent service, but they do not serve space, tier, assort or distribute and require rehandling of the material.

Familiar types, such as ramps, chain, rope and belt conveyors, horse and motor lorries and movable inclines, are recommended for the special uses for which they were designed.

The two diagrams attached to the photographs represent the fixed pillar jib cranes. These are, however, not adapted to miscellaneous freight assorting and distributing. The upper photograph, to which reference is made, is an enlarged view, and the lower is of twelve such cranes, installed over two years since, but were never used, as not being adapted to the work.



No. 4. A. Warehouse Crane. B. Folding Traveling Jib Crane. Practical machines but not by themselves suitable to the quick C. Locomotive Crane. D. Traveling Bridge. packet-freight-handling requirements of the "everywhere."

The fixed warehouse crane, among the four diagrams, is an excellent machine, and if of sufficient power is well adapted to warehouse work, but not for the rapid hoisting and conveying demanded by trans-shipment shed practice. It is extensively used, and is superior to the floor-occupying dock-winches with their block-tackles and multiplicity of fall ropes.

The folding jib-traveling-crane can be used advantageously in some cases, for the first or last movement of transference.

The locomotive crane, although it travels and hoists, occupies too much space for the interior of sheds, and a large number would be required to give the continuous service for miscellaneous freight.

The traveling bridge, in the fourth diagram, when equipped with overhead tracks and gliding transfer switches, is used for yard service, as illustrated later.

The next photograph clearly demonstrates how the gantry crane must be supplemented in the second movement of discharging. In this view it is supplemented by manual labor, producing manual rehandling and congestion.

The Gantry Crane.

Combined with tractors and carriage hoists on fixed and movable tracks, as later described, this crane fulfils the most exacting conditions.

Essentials.

What is essential is that the machinery will hoist, assort and distribute bulk freight, if desired, and, in any event, package freight. The traveling shop crane would fulfil the conditions were it not for the delay.

If one is familiar with only a few types of machinery, it may appear to him difficult to understand how the types he has in mind will perform the universal work of freight handling. When one is himself ignorant how

anything is to be done, he may promptly say, that it is impossible.

It was, therefore, essential to state the most rigid requirements of various kinds of service, and show what each type was doing and whether it could satisfy this most exacting service.

Overhead Conveyors.

There are several types of overhead conveyors, some with two rails, either far apart or close together, the latter with a rail upon each side of the lower flange of an I beam. These, with an operator, are called mantrolleys, but have different names in different countries. There is telpherage, which operates upon one rail, either the rail upon a wooden stringer or upon an I beam, or upon a rail attached to one side of the I beam.

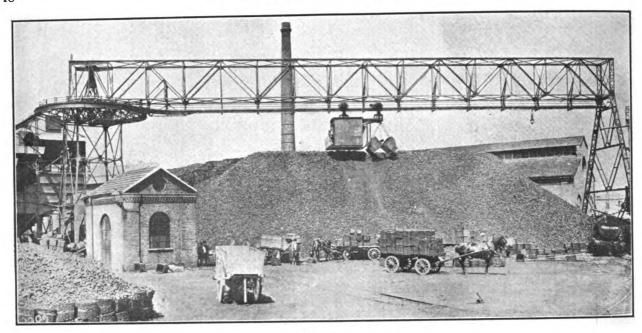
Operative Conditions.

The illustrations are given to select from these, those which will serve cubic space, not using floor area, not interfering with floor movements, and which will by themselves tier, so as to give large holding capacity without additional expense for this operation.

It is essential to avoid congestion, which is another name for rehandling. Above all, there must be rapidity; this means that the loads must travel in circuits, one machine following another so closely that there will not be lost labor-hours due to waiting.

It will be noticed that the greatest stress is laid upon what any machinery must do or not do, to be successful. If these hard conditions are fully comprehended and realized, by a process of elimination, the number of types will be reduced to a few for consideration.

In the man-trolley type, and in telpherage proper, the tracks are fixed. Then, there is a modified overhead trackage, wherein, by a combination of fixed and movable tracks, there is a great reduction in the length of



No. 5.

Serving a circular space by an overhead movable track. The outer supporting leg travels in a circle on ground rails.

A gliding contact enables the electric tractor-hoist to pass f rom any position of the movable straight track to the fixed loop track. Loads can be deposited or reclaimed anywhere within the circular area, thus serving cubical space.

trackage and corresponding expense, to serve a given area.

Bulk freight carriers are often automatic, that is without an operator, but, as with the automatic, the loads are lighter and the speeds about one-half, the nonautomatic is preferred for bulk freight, and should always be used for miscellaneous cargoes.

One type of handling coal with a circular moving track serving areas is depicted in the accompanying photograph.

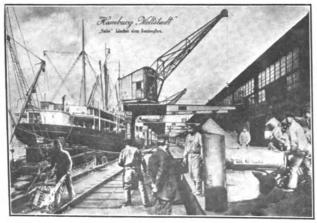
The mechanism in its operation must be able to surmount obstacles, whether a pile of merchandise, or trains of cars, between the vessel and the shed, or between the shed and the warehouse.

Raised car or shed-platforms at right angles to the direction of travel must not delay the traffic movements.

The first cost should be small with low expense for maintenance.

The Machines.

The next photographs, with accompanying descriptions, explain clearly the overhead carriers, tractors and car-



No. 9.

Traveling half-arch gantry crane supplemented by manual labor. When installed, the burtoning track projects in front of the shed doors, and the load is burtoned from the hook of the carriage hoist.

riage hoists, which supplement the traveling gantry cranes.

In Operation.

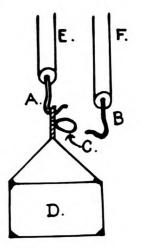
The two groups of three photographs each represent the practical application of electric cranes, electric overhead carriers, both automatic and non-automatic, fixed and movable tracks, some straight, curved or in loops.

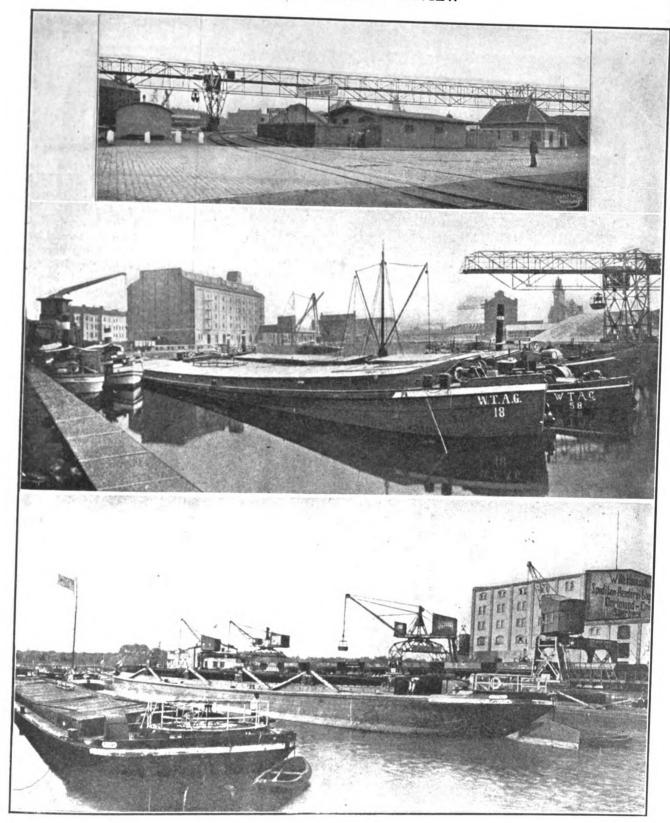
Burtoning.

It may be said that nearly every ton of cargo freight on the Atlantic Coast is burtoned, excepting certain coastwise traffic.

This burtoning consists in hoisting the draft from the hold of the vessel by the fall rope which is attached to one boom, and without stopping the conveying movement, while still in motion, this draft is transferred to the fall rope of a second boom and lowered to the place of deposit. Often there are as many as six derrick booms attached to one mast, all of which can be used for burtoning.

Sometimes one boom is operated in conjunction with a side jib crane or with a block and pulley suspended from a pole or an I beam above the shed roof, the weight being in the latter case transferred from one fall rope to another without hook-changing, the principle being the same.





No. 11.

A. Long distance overhead conveying and hoisting machinery. Buildings, railroad tracks and cars, and crosswise traffic, no obstacles to rapid movements.

B. Tractors and hoists, and various cranes, for loading and discharging the celebrated Rhine-freight boats, which often have a carrying capacity of 3,000 tons. The whole top of the boat is removable in small sections so that there is access by the draft-hooks to every piece of cargo.

C. The horizontal steering wheels, of large diameter enable the great rudders to be easily moved. The gantry cranes with a capacity from one to five tons are everywhere in evidence. The problem is moving light weights quickly, not heavy weights slowly.

There are several pictures of this burtoning. In the

one from Antwerp there are four booms attached to one mast, and in the other, above the ship's winches, a method of attaching the booms to the masts.

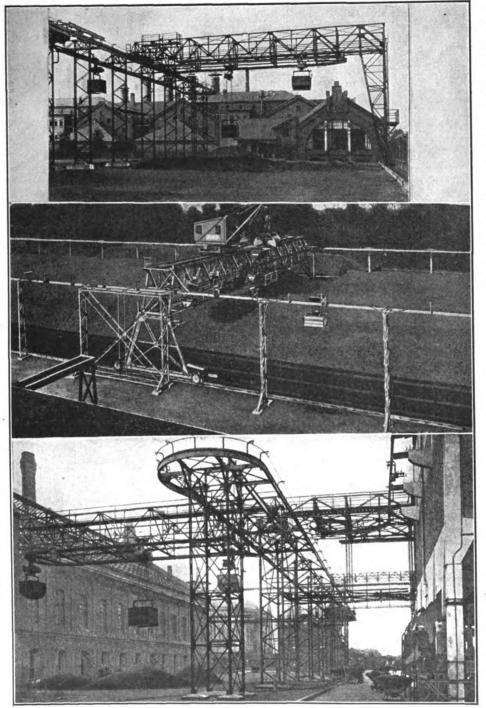
The Burton-Loop.

The diagram on p. 18 is a sketch of the burton-loops.

When there are a number of marks in one draft, there may be several burton-loops, one for each mark or consignment.

Operation of Burtoning.

In discharging, as per the diagram, the draft "D," without being lowered upon the deck or floor, is transferred from the hook "A" to the hook "B," by the hook



No. 12.

MOVABLE TRACK TYPES.

A. Serving the whole rectangular area by a movable loop track. The automatic traveling carriage-hoist passes from the fixed track around the movable loop track, and then upon and around the fixed loop. All the ground area is served.

B. The traveling bridge with legs extending to the ground, supporting a cross movable track, between two fixed side tracks with gliding connections. The bridge carries a gantry crane and a hopper for filling the automatic traveling buckets without hoists.

C. Loop tracks fixed and movable.

The movable track supported from structure in the center, one end from the building and the other from the steel. Movements controlled by hook-man upon the right.

"B" being inserted in the burton-loop "C." The fall rope "E" being slackened, the weight of the load "D" is then supported from the hook "B" and the hook "A" is released.

This movement is performed with great rapidity, without stopping, and the resultant of the two booms is a greater range and less time consumed than by swinging the first boom through 90° instead of 45°. While from the second boom the draft is being deposited, the hook of the first boom is being lowered into the hold for another draft. Even with the combination of the two booms, the fixed jib crane, or the block and tackle, the space reached at the side doors of the pier is far too small for placing cargo. This is demonstrated in the succeeding photograph where the load is being lowered upon a platform projecting from the side door of the pier shed. The sustaining rope is attached to a block and pulley suspended from the I beam above the roof. The absurdity of only having such small places of deposition for a ship's cargo is evident. It is "constricted neck of the bottle" referred to in Mr. J. W. Hill's paper on terminals.

Broken cases, or one dropped overboard or into a "catching" net is not un-common. Wretched as is the condition in regard to rapidity, economy or safety, the second movement of this freight is worse. On the inside end of this little narrow platform, with only fair working room for one medium sized dry goods case, only one hand barrow or truck can receive its load.

There is only space for

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one barrow, and, as a rule, lines of men and barrows are waiting. There is much lost time, and rapidity is ignored.

Fortunately for our commerce, this method of handling freight is not universal.

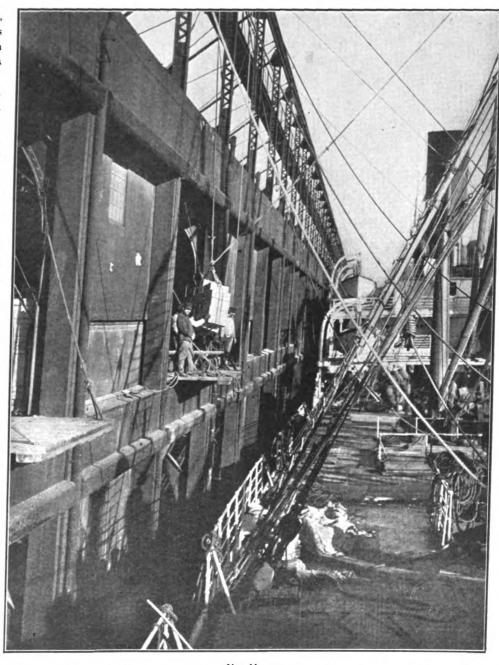
This is thus explained as some defend this method as being worthy of imitation. Compared with the other methods of operation, in the United States, England, Germany, Holland, Belgium, in fact everywhere, it is difficult, indeed, for such a condition or statement to be defensible.

With some thirty transportation companies clamoring for berths along the congested waterfront of New York City, everything should be done to secure rapidity.

Carriage Hoist Burtoning.

In complete mechanical transference, instead of burtoning to the second boom, derrick or block and tackle, the drafts from the hatchways are burtoned to the carriage hoist suspended from overhead tracks, these hoists taking the place of the second boom, if the ship's winch be used.

Such an arrangement of booms or roof tackle is not so rapid as with the gantry crane (fully illustrated in the October number of the Pacific Marine Review), which operates over a far greater range within a circle of some twenty to fifty feet radius, serving loop tracks, and two gantry cranes will, in operating, serve the over-



No. 14.

The small size of the receiving platform, projecting from the side opening of the pier is plainly seen upon the extreme left front. Upon this the cargo must be lowered.

The point of suspension of the rope being directly above the draft of boxes beyond, indicates that the boxes must be deposited outside the line of the building on the end of the platform.

This contracted-platform space produces congestion, prevents rapidity and adds greatly to the expense. These are still further augmented by the line of hand-truckmen within the building, waiting at the inside end of the platform.

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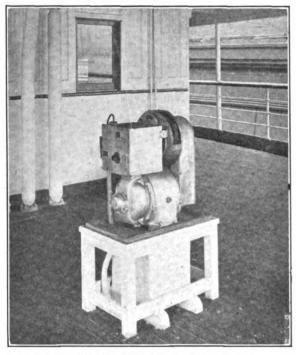
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Maritime Building SEATTLE



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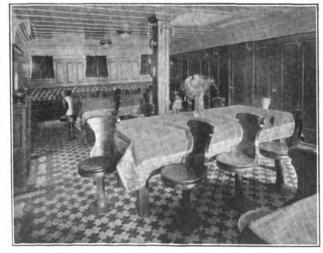
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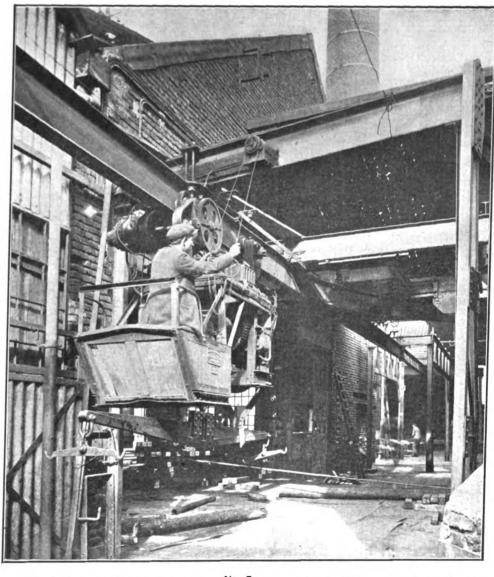
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No. 7.

Opening an electrically controlled overhead track-switch. Switches, movable tongues and cross tracks, in the operating freight movements, should, however, be avoided whenever possible.

The above system of control is applicable to movable tracks.

head tracks for a freighter of five hundred feet in length. Views have already been given under the head of different types of machines, of the tractor and carriage-hoists. This burtoning from the gantry to the carriage hoists gives the greatest speed of economical transference, no delay, no congestion and no manual labor of rehandling.

Where the load is burtoned from the hook of the gantry to the hook of the carriage-hoist at its high position, there is no hoisting by the carriage-hoist, only conveying and lowering, and, in loading, similarly, there is no hoisting by the gantry crane. This makes quite a difference during the hour. Cargo transferring has been reducing the time, from days to hours, hours to minutes and minutes to seconds.

An operating condition which has proved of practical worth has been the conveying of each consignment or portion of a consignment by itself. Each carrier should take in one trip, only packages of the same mark to one consignment pile. This diminishes the liability of errors in routing, and facilitates assorting and distribution, and should be retained in mechanical transference, having, however, several carriers. This is only

attained by having a train of carriage-hoists, preferably four, and one tractor.

By having one tractor-man hoist and distribute four loads, one man does the work of four men.

This would reduce the cost of the one man method for each carrier to one-fourth.

Assorting and Distributing.

There are more than 800 similar cranes at the port of Hamburg alone.

As soon as the loaded train starts on its circuit, another train of four carriage-hoists takes its place, ready to be burtoned. The gantry crane and the ship's winch can operate simultaneously.

As each carriage-hoist conveys only one plainly marked load and as each train serves only its own loop area (see diagram), when the train comes to the consignment pile the load of one hoist or more, if of the same mark, is there deposited.

The overhead trackage as pictured and described in this and the October number consists of fixed and movable tracks. There are hundreds of installations, with whole catalogues of illustrations. It will now be noted that there is involved no new or untried mechanism. These machines are standard gantry cranes or the ship's winches or derricks, thousands of both in use, and the overhead trackage and electric carriers in use in many countries.

Improvements have lately been made in all classes of freight-handling machinery.

In the gantry crane, reduction in cost and fewer parts; in the overhead trackage, no opening or closing switches or tongues or cross tracks. This appears to be the acme in simplicity, not only in the trackage, but in the total operating, as the tractor man only travels around and around a circuit, there being no open ends. The assorting is at the beginning of the operation, each carriage-hoist taking not more than one mark each trip. The distributing consists in leaving at each consignment pile its marked load. In loading the ship there is no assorting or distributing.

The hook-man on the floor generally controls the movable track, though it can be controlled from the cab of the tractor.

Conclusions.

First, that conveying machinery without hoisting, and many types of machines which both hoist and convey, will not fulfil the exacting requirements of miscellaneous cargo-handling.

Second, that, at marine terminals, any such freight movements should preferably not occupy costly and limited floor space.

Third, that burtoning between the standard gantry crane (or the ship's boom or derrick), and trains of carriage-hoists on overhead fixed and movable tracks, produce rapidity and economy in both discharging and loading vessels, including assorting, distributing and tiering.

OBSERVATIONS FROM THE BRIDGE.

(From "Shipping Illustrated.")

It is hard to believe that even such a dyed-in-the-wool politician as Senator La Follette would descend to such oratorical pantaloonades as he vented last Tuesday while drumming up enthusiasm for the arbitrary measure which he espoused at the behest of the Seamen's Union to show the labor interests that he could obtain for them something which neither party would put through. It

is an open secret that the Senator's nautical knowledge is derived from the able delegate of the Seamen's Union. Andrew Furuseth. Rant, cant and flatuous flapdoodle are the inevitable handmaidens of one-sided arguments on behalf of a pernicious measure such as the cleverly worded clauses in the bill anent allotments of wages, manning of lifeboats and qualifications of able seamen, which would result in giving the Seamen's Union absolute control of the manning of all American ships and of foreign ships trading to American ports. Hark then, ye shipowners, to the wisdom and eloquence of La Follette on the manning of lifeboats:

"Take a vessel manned by men who know the sea. She throws her head up to the coming storm; she meets every mass of water hurled at her as does the fencer in the arena the thrusts of his adversary. She has been warned, if she is in charge of able seamen, of the coming of the storm. Their weather-beaten faces have been turned skyward; they know the sea; they know the sky; and when the hour comes that in all its fury the raging storm breaks, their boat is prepared for it. Stripped like an athlete, she turns to meet it. Every man, too, is at his place and sure of himself. They are able seamen; they are not landlubbers; they are not afraid, and, oh, what their confidence is to the whole mass of humanity on the vessel! If there should come something unforeseen, perhaps some vessel in the same lane of travel driven by the storm, not obeying the rules that should control all sea travel, and it meets and wounds her to death, the perfectly managed and perfectly officered and manned vessel, when that hour comes, is prepared and cares not only for its crew, but for all intrusted to their keeping. How important, then, it is that there should be confidence on the part of all on board in the officers who understand their business and in the men who understand the officers and execute instantly every order issued; and prompt obedience to orders sometimes settles the fate of a vessel and decides the whole issue."

For the benefit of readers unacquainted with the vivid imagery of Senatorial eloquence, it is necessary to add that the beautiful nautical picture presented by Mr. La Follette is promised in real life by the Seamen's Union when ships leaving American ports will be compelled to carry two "able seamen" for each lifeboat; "able seamen" being sailors of three years' experience at sea or on the Great Lakes and over 19 years of age. That such are serious qualifications for seamen to possess as efficient boat handlers is denied by all experienced seagoing officers and it does not require much knowledge of the sea to realize that length of service at sea does not qualify a man to handle a lifeboat. There are many instances of men who have served on deck at sea on various vessels for years who are not experienced in handling small boats; and as the object of manning legislation is to safeguard human life at sea, it seems it should make no great difference as to whether a man is called an "able seaman," a "skilled lifeboat man," or a "life guard," so long as he is qualified to perform that particular service which is expected of him during the hour of disaster or need for his service. On this point, the shipowners had submitted to Congress that it would be wiser to provide as a requirement to protect human life that no vessel should depart from a port of the United States unless she had in her crew not less than two skilled persons for each lifeboat carried, and that such persons should be required to demonstrate to the satisfaction of the local inspectors, under rules to be prescribed by the Department of Commerce, that they



are capable of swinging out, lowering, detaching from boat falls, experienced in handling oars, and understanding the proper manner of placing persons in such life-A mere three years' service of itself would be boats. no indication of capacity. Capacity alone and not length of service should be considered in the selection of crews for any position in all departments of a ship. The men who are to-day best fitted to fulfill the exceptional duties in the deck department of a modern steamer are those brought up around the rivers and harbors on our seaboard and in such bays as the Chesapeake and its tributaries, where they are accustomed to handle small boats of all kinds from boyhood; yet by the terms of the bill proposed by the seamen the best of these men would be prohibited from qualifying as "able seamen."

We purposely refrain from taking issue with those sections of the bill just passed by the Senate whereby the living conditions on board ship are to be standardized and improved. Outside the very small coterie of shipowners who have made money by the systematic poisoning of their men through unfit food and by encouraging desertions in order to save paying wages, it is recognized that the time has come for Congress to enforce by law on all American ships as high a standard of living accommodations as our leading shipowners have themselves provided without compulsion, accommodation the standard of which is, be it understood, far above anything existing in the most modern European-owned vessels. We come, however, to another story when studying the crafty means resorted to by the Seamen's Union to gain control of the seafaring labor population of America through legislation apparently aimed at improving the working conditions of seamen and the safety of travel by sea. It is obvious that the Union is not seeking so much the protection of human life as a dominating position over shipowners. A careful study of the provisions of the bill putatively fathered by Mr. La Follette will show that it is most adroitly drawn and so cleverly woven together that to those not well posted on maritime affairs some dangerous clauses look most reasonable. Take, for instance, the clause abolishing allotments of wages, except to immediate relatives. This, we are told, is to prevent crimping. However, it may also bring about a condition by which the sailor himself is deprived of being able to find lodging anywhere except at the place which may be chosen by a majority of the seamen themselves; because it can readily be understood that there could be many honest boarding-house and lodging-house keepers who might hesitate to grant credit to a sailor who may be here to-day and who may ship for some foreign port before he could possibly have funds with which to pay for his keep while seeking employment. Driving the seamen in this way to one central point will undoubtedly have the effect of combinations among the men being formed and conditions being laid down which may not be conducive to safety As regards the overriding of Consular treaties by giving foreign seamen the right to desert at American ports, it is said to admit that it is useless nowadays to argue against the peril involved in trifling with our foreign relations for the sake of playing politics at home. After the treatment of the Hay-Pauncefote treaty in the Panama Canal Act and of our reciprocity treaties in the Tariff Act, Congress may go to any legislative length without doing much more damage to our national reputation abroad than it has already inflicted. It is, therefore, to be expected that before many moons any

undesirable alien which would be debarred from admission coming as a paying passenger will be free to land in America provided he deserts from a foreign ship at an American port, treaties to the contrary being held void or subject to abrogation. When last week Senator Burton said that "all these things ought to be done with a due regard for diplomatic courtesy, with proper respect for existing treaties, and in such a way as to cause no irritation or jolt in our relations with foreign powers," his wise exhortations resounded through the Senate Chamber like the mournful echo of a sermon in the desert.

THE GRADUAL DECLINE OF AMERICA'S SHIPS.

Fifteen years ago the Cramps, of Philadelphia, built for the United Fruit Company four ships, which were named for four distinguished American Admirals. "Admiral Farragut" and the "Admiral Sampson" were put into commission between Boston and Port Antonio, and the "Admiral Dewey" and the "Admiral Schley" between Philadelphia and Port Antonio. Although built for the fruit trade, these ships had accommodations for a limited number of passengers, and carried the mail between their home ports and Jamaica, receiving for the latter service a subsidy from the United States. About five years ago the United Fruit Company sold the "Sampson" and a year ago the "Farragut," and quite recently disposed of the "Dewey" and the "Schley." These vessels were sold to the Alaska Pacific Steamship Company for service in Pacific Coast waters. With the last sailing of the "Dewey" from Jamaica on October 22 and the last trip of the "Schley" to Port Antonio a week later there will not remain in the Jamaica fruit trade a single vessel flying the American flag. When it is borne in mind that Port Antonio cleared for United States ports 708 ships in 1911 and 589 last year (decrease in shipping due to losses in fruit crop from drought and storms), it is a significant fact that very soon it will be a rare sight to see at this great shipping port a vessel under the Stars and Stripes. Other ships are to take the place of the two "Admirals," and it is expected that the mail service between Philadelphia and Port Antonio will in some way be continued.

THE SEAMEN'S BILL.

The Committee on the Harbor and Shipping of the New York Chamber of Commerce on October 21 sent a telegram to President Wilson, Vice-President Marshall, and others, urging that no legislation be passed at this time by the United States, as indicated by Senate Bill 136, known as the Seamen's Union Bill, in advance of the International Conference to meet in London, November 12, called to consider this very subject.

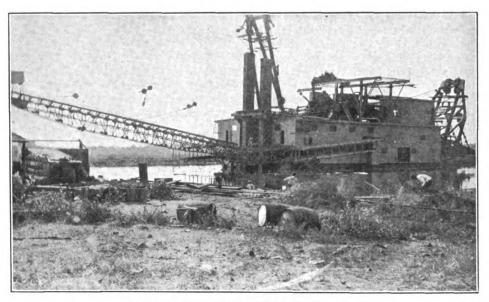
The Senate, however, led by Senator La Follette, passed the bill with the La Follette amendments.

An amount of \$500,000 was granted by the Canadian Parliament at its last session towards the construction of a drydock at Esquimalt, B. C.



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This the first gold dredge with Steel Hull erected in the United States, cost approximately \$300,000. Total weight of machinery and hull is over 4,000,000 lbs. Each of the two spuds weighs over 86,000 lbs. The buckets have a capacity of 15 cu. ft. each and there are 98 on an endless bucket line. The dredge has a working capacity of 10,000 cu. yds. of earth in 24 hours.

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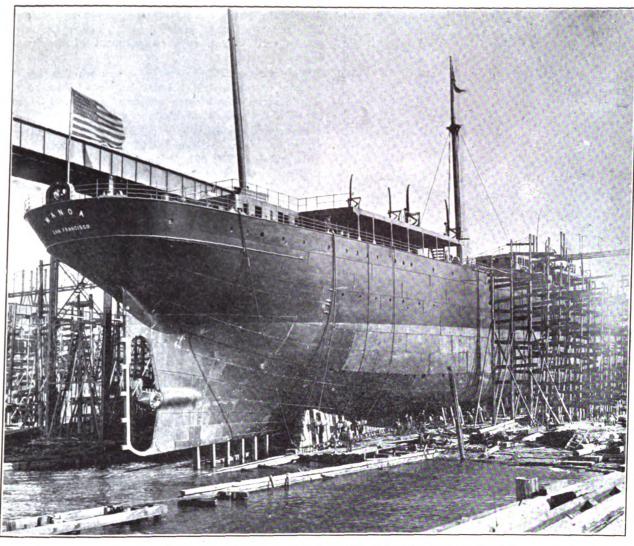
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S. S. "MANOA"-NEW VESSEL FOR THE MATSON NAVIGATION COMPANY.

S. S. "MANOA" LAUNCHED.

The "Manoa," a single-screw steamer built by the Newport News Shipbuilding Company of Newport News, Va., is the latest addition to the Matson Navigation Company's fleet and was launched on Saturday, November 1, at Newport News. The christening ceremony was performed by Miss Carolene A. Cooke, daughter of Mr. and Mrs. C. Montague Cooke, Jr., of Manoa Valley, Honolulu.

The vessel will be completed and ready to leave the eastern seaboard for the Pacific about the end of December and will be operated in the regular service of the Matson Navigation Company between San Francisco and the Hawaiian Islands.

She will be equipped for carrying a large amount of cargo and is provided with modern and up-to-date quarters for the accommodation of ninety first-class passengers.

The leading particulars of the vessel are: Length over all446 ft. Length between perpendiculars.....430 ft. Breadth, molded 54 ft. Breadth, molded to upper deck 33 ft. 6 in. Speed loaded 14 knots

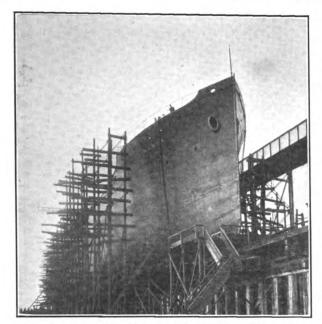
The ship has been constructed in full accordance with Lloyd's Register of Shipping, Class 100 A1. The machinery is located aft as on the other vessels of this line and the cargo will be carried forward of the machinery space, below the upper deck and in that portion of the

long poop between the passenger accommodations and the machinery space.

Provision is made for carrying a large supply of fuel oil in the double bottoms and in deep tanks in the lower part of the forward hold. These tanks in the lower part of the forward hold are also fitted up with separate pumping plant for the carrying of molasses in bulk. A large space in the lower 'tween decks aft is fitted up for carrying refrigerated cargo and the total space available for cargo is about 385,000 cubic feet, exclusive of molasses tanks.

The upper deck amidships, as well as the large bridge deck house above same, are devoted to the accommodations of passengers. Deck officers' quarters and pilot house, including smoking room for passengers, are located in house above the passengers' quarters. On the promenade deck, aft, are located the purser's office and Marconi room. The seamen's quarters are located in the forecastle while aft on the upper and poop decks are located quarters for the engineers, steward's department, etc.

The forward end of the bridge deck house is devoted to the social hall and the balance of this house contains staterooms with private bath rooms and accommodations for doctor and stewardess. These rooms open out on to a spacious promenade which extends from the forward end of the bridge right aft to the stern of the



ANOTHER VIEW OF THE LAUNCHING OF THE "MANOA."

vessel, similar to the promenade deck on the "Wilhelmina."

Below on the upper deck, just forward of the midships, is located the dining saloon, with accommodations for seventy-eight people at one seating, at ten tables. Aft of dining saloon are first-class staterooms, pantry, galley, etc.

For the safety of those on board, water-tight subdivisions are provided by cellular double bottoms extending full length between peak bulkheads as well as by seven transverse water-tight bulkheads.

Ballast is provided aft in the cellular double bottom which is subdivided into tanks aft for the storage of fresh water, while forward the space is devoted to the storage of fuel oil.

The vessel is constructed on the original transverse frame principle with two rows of wide space pillars and girders in the holds. The cargo holds are divided into four compartments with cargo hatches 20' 3" x 16', one to each compartment. Wing hatches, 5' x 4' 6", are also

fitted in the 'tween decks for feeding cargo to the lower holds and large cargo ports, 9' x 6' 6" clear are fitted, one on each side of each compartment of the 'tween decks.

There are two Murray type of steam winches for the handling of cargo at each hatch and in addition to the regular cargo booms there are fitted two steel booms, one of 20-ton and one of 50-ton capacity.

The propelling machinery consists of one quadruple expansion engine of about 4000 indicated horsepower with cylinders, 27", 39", 58" and 87" diameter by 54" stroke. Steam is generated in six single-ended Scotch boilers, 13' 3" diameter by 12' long, built to carry a working pressure of 225 pounds per square inch, and to operate with fuel oil mechanically atomized under natural draft. The oil fuel system is of the Newport News Shipbuilding & Drydocking Company type.

The propeller is of the right-handed built-up type with manganese-bronze blades and a cast-iron hub. The main condenser is of the independent cylindrical type. The auxiliary machinery consists of one centrifugal circulating pump, an independent air pump, auxiliary independent air pump, two independent direct acting feet pumps, one 25-ton evaporator, a distiller, feed filter and heater, bilge and ballast pumps of large capacity and general service, sanitary and various other pumps.

The steering gear is of the Brown Steam Tiller type and is equipped with complete telemotor control. An elaborate outfit of machine tools is fitted in the engineer's workshop and a full complement of oil tanks for engine rooms are supplied in sufficient capacity for carrying lubricating, cylinder and refrigerating engine oils for sixty-day runs.

The ship is heated and thoroughly ventilated throughout. Electricity for lighting and power purposes is supplied by two 20 K. W. engine driven generators. The refrigerating plant is equipped with two 8-ton refrigerating machines with all necessary pipe and cold storage rooms. Drinking water is circulated through coils to public spaces.

Life-boat accommodations are provided for all on board by means of seven twenty-six feet metallic doubleended boats in addition to the working boat and all are carried under Welin patent davits.

LLOYDS' REGISTER OF SHIPPING.

Annual Report, 1912-13.

At the close of the year ended June 30, 1913, 10,466 merchant vessels, registering over 22½ million tons gross, held classes assigned by the Committee of Lloyd's Register.

During the year, the Committee assigned classes to 651 new vessels. Their registered gross tonnage amounted to 1,664,667 tons, which total is the highest for one year ever recorded in the history of the Society. Of the 651 new vessels, 593 represent steamers of 1,643,250 tons, and 58 sailing vessels of 21,417 tons, all of which were constructed, in accordance with approved plans, under the special supervision of the Surveyors to Lloyd's Register. Of the total, 1,010,876 tons, or about 60½ per cent., were built for the United Kingdom, and 653,791 tons, or about 39½ per cent., for the British Colonies and foreign countries

In addition to the recently issued French translation of the Society's Rules, a German translation will shortly be available. This has been prepared to meet the convenience of shipbuilders and engineers in Germany, where a large amount of tonnage is being constructed under the special survey of the Society's surveyors.

In last year's report reference was made to the increasing employment of the Diesel engine for seagoing vessels. Some of the engines of this type which were

under construction twelve months ago have been completed; others are now being fitted on board, and some are still unfinished. At the present time there are in service 12 seagoing vessels, classed with this Society, which are propelled by Diesel engines, and there are 25 others being built under the inspection of the Society's surveyors.

The "Fordonian," after some preliminary trouble with her auxiliaries, made a non-stop run of 26 days' duration from the Clyde to Quebec. This vessel is now engaged on ordinary service on the Great Lakes of North America, and appears from the latest reports to be giving complete satisfaction. The "Hagen" made a voyage to New York and back, but experienced some difficulty with her auxiliaries on the return voyage. In both these cases the main engines were satisfactory.

her auxiliaries on the return vovage. In both these cases the main engines were satisfactory.

The "Suecia," "Pedro Christophersen," "Siam" and "Annam." as well as the "Selandia" and "Christian X." previously built by Messrs. Burmeister & Wain, are giving satisfaction in their ordinary service. These builders have now in hand at Copenhagen and at Glasgow 23 sets of Diesel engines for 14 vessels to be classed by Lloyd's Register. It should be mentioned that with further experience of these engines, increased economy has been effected, and the improvements have been such

that they have also been applied to the older vessels. The confidence which has been obtained as a result of the successful working of the earlier vessels, has led the builders to reduce the number of cylinders in the later designs from 8 to 6 per shaft, and at the same time to make the cylinders of such larger dimensions that a considerably higher power will be developed upon each

It may also be mentioned that the "Juno," as well as the "Vulcanus" referred to last year, engined by the Nederlandsche Fabriek van Werktuigen en Spoorweg-Materieel and managed by the Anglo-Saxon Petroleum Company, have proved so satisfactory in service that the owners have put them to work in their local trade in the east. In addition, these builders have now in course of construction at Amsterdam, II sets of Diesel engines for 6 vessels to be classed with this Society.

In some vessels fitted with Diesel engines there have

been minor difficulties with details, such as pistons, cylinder covers, etc., but these appear to have been It was only to be expected that in the early stages of the application of these engines to seagoing purposes some troubles would arise. The Society's surpurposes some troubles would arise. The Society's surveyors are, however, noting the results of the experiences which are being obtained from the engines now at work, and the facts are being collated and analyzed by Mr. Milton, the Society's chief engineer surveyor, who has devoted particular attention to, and has made a special study of Diesel engines, upon which he is a leading authority. As the number of engines increases and experience accumulates there will doubtless be a general improvement in the design of details, which will thus be made more reliable to withstand the very severe conditions of high temperatures combined with the heavy stresses they have to endure. This desirable end would be facilitated by a frank interchange of the individual experiences of those interested in this type of engine.

Of the 25 Diesel engine vessels building, referred to above, six are to the order of the Anglo-Saxon Petroleum

Company and seven for the East Asiatic Company of Company and seven for the East Asiatic Company of Copenhagen. It is interesting to observe from the latest published report of the latter company that they have also arranged to replace by Diesel engines the present steam engines of three of their vessels. These steam engines will be fitted in three other vessels building for them, which will be engaged in a trade where it will be constituted of oil but for which be profitable to use coal instead of oil, but for which

trade the present three steamers are not suitable.

A feature which stands out very prominently in the operations of the Society during the twelve months ended June 30, 1913, is the unprecedented number of vessels of upwards of 5,000 tons which have been asressels of upwards of 5,000 tons which have been assigned the 100A1 class. During the period in question no fewer than 120 such vessels have been classed.

The latest returns of vessels being built to the Society's classification show the same tendency towards the con-

struction of vessels of large tonnage.

There are also numerous steamers of 10,000-12,000 tons

each being built to the Society's classification.

In addition to the foregoing, vessels have been built or are in course of construction, with a view to receiving the Society's classification, to the order of the British Admiralty, the Governments of the Dominion of Canada States of America. Canada, South Australia, the United States of America, Austria, Russia, Brazil, Ceylon, Bermuda, and Southern Nigeria, as well as for several of the principal railway

companies of the world.

Whilst the Society's Rules provide for the construction of vessels to conform to a standard of strength entitling them to the highest class, the Committee are always prepared to approve of proposals showing de-partures from, or modifications in, the method of con-struction shown in the Rules, provided equivalent struc-tural strength is maintained. Moreover, the Committee are prepared to assign classes to vessels intended for special purposes so long as they are satisfied that the scantlings and arrangements will render the vessels efficient for the contemplated employment.

During the period under review plans have been approved for vessels of many types, including a coast-guard cruiser, a non-propelling rock-cutter barge, a pumping steamer for land reclamation, a steel screw lightship, and a train ferry for service between Quebec and Levis; besides other vessels for channel and river service, and various coasting trades, as well as dredgers, barges, motor launches, etc.

The launch of the Cunard Company's quadruple screw

turbine steamer "Aquitania," 48,000 tons gross, from the yard of Messrs. John Brown & Co., at Clydebank, was an event of unusual interest during the year. In this steamer, the largest British vessel afloat, special attention has been given to an extensive system of sub-division by means of watertight bulkheads and flats, whereby she is rendered practically unsinkable. The steamer is being built under the supervision of the Society's surveyors with a view to obtaining the 100A1 class, and the Committee are much gratified at the acknowledgment made on the occasion of the launch that the Society's services in connection with the design and construction of the "Aquitania" have been of great value to to the owners and builders of the vessel.

The number of vessels built and building upon the Isherwood system of longitudinal framing has largely increased during the last twelve months. Up to the end of June, 1913, 116 such vessels, representing 552,845 tons, had been assigned the Society's classification, and there are now in course of construction under the in-spection of the Society's surveyors 85 of these vessels, registering 451,344 tons—altogether a total of 1,004,189

The year under review has witnessed a remarkable increase in the amount of tonnage classed by the Society in respect of vessels intended for carrying oil in bulk. During the twelve months ended June 30, 1913, no fewer than 45 such vessels, of 202,005 tons, received the Society's classification. The demand for vessels of this description still continues, and there are at the present time 83 of these vessels, of 381,410 tons, preparing and in course of construction under the supervision of the Society's surveyors.

Several matters of importance relating to the Society's Rules for the construction of ships and machinery have occupied the attention of the Technical Committee during the year. Among these may be mentioned the revision of the Rules in connection with the burning and carrying of oil fuel, the flash point of which does not fall below 150° Fahrenheit. These Rules, originally issued in 1902, were framed in accordance with the experience which had been obtained up to that time but perience which had been obtained up to that time, but since then there has been considerable development in the use of oil in place of coal; and in making the present revision advantage has been taken of the increased knowledge which is now available.

The recommendations of the Technical Committee have been adopted by the General Committee, and the Rules as now revised and amended are in accord with the

most recent experience and practice.

The use of oil fuel with a flash point below 150° Fahrenheit has not yet become sufficiently general to warrant detailed Rules on the subject being formulated by the Society, but the Committee give careful arrangements in any case in consideration to proposed arrangements in any case in which it is desired to use low flash oil fuel, and they have in fact already approved several installations of this kind.

(To be Continued.)

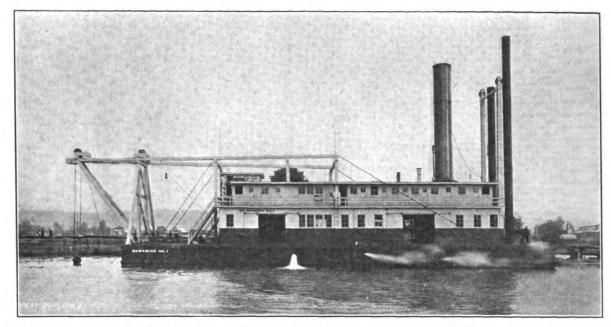
PLANS OF WHITE PASS AND YUKON ROUTE NOT YET COMPLETED.

Mr. O. L. Dickeson, President of the White Pass and Yukon Route, visited San Francisco for a few days during the latter part of the month of October.

Mr. Dickeson was not able to give out any definite information in regard to the steamship line his company proposes to establish between Puget Sound and Southeastern Alaska, as the plans will not be completed until after the directors' meeting in London. This meeting will be held shortly after the first of the year and at which time the Pacific Marine Review will publish advices as to its result.

A light of 530 candle-power will be established on Redding Rock, Cal., which is 116 feet above water, on or about December 15, 1913. The light will show one white flash every 10 seconds: Latitude 41° 20′ 20″ North; Longitude 124° 10′ 35" West.





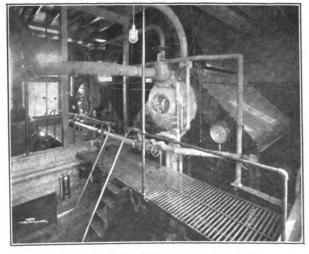
Dredge "Duwamish" moored in the Duwamish River where the work of deepening, widening and straightening the channel is now under way.

TWENTY-FOUR INCH SUCTION DREDGE "DUWAMISH" RECENTLY COMPLETED AT SEATTLE.

The "Duwamish," quite recently completed at Seattle to the order of the Seattle Port Commission, has a length of 132 feet, beam 40 feet and depth of 11 feet. Douglas fir has been used in the construction of this dredge, the completion of which added another success to those already attained by her designer, Mr. J. B. C. Lockwood, who planned the two powerful 30-inch dredges for the port of Portland and the two 24-inch dredges now under construction for the United States Engineers and which are being built for use on the Columbia River.

The boiler plant of the "Duwamish" consists of two large sectional watertube boilers, built by the Ballin Watertube Boiler Company of Portland. Or., and a small vertical auxiliary boiler built by the Willamette Iron and Steel Works, also of Portland.

The Ballin watertube boilers are fired with oil and



BOILER ROOM-DREDGE "DUWAMISH."

furnish steam at 250 pounds pressure. These boilers are sufficiently large that in case of emergency, the dredge can be operated with just the one boiler.

The main engine of the "Duwamish" is of the four cylinder triple expansion type, the dimensions being 16x28 32x32x16, developing 1500 I. H. P. at 250 revolutions a minute. The two L. P. cylinders being vertical and the H. P. and I. P. being horizontal, a perfect balance of parts is ensured—this is considered a great feature in dredging operations.

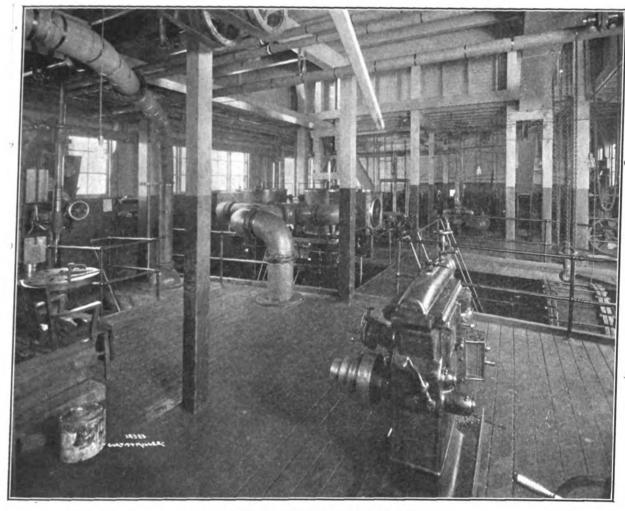
The Cutter engine equipment consists of a compound type of engine driving the cutter gear. The hoist and swinging gear consists of the usual type.

The "Duwamish" is equipped with a No. 12 Staples and Pfeiffer oil burning system, furnished and installed by the Marine Pipe and Machine Works of Seattle. The contract for installing the boilers, engines, pipe lines and all machinery of the dredge "Duwamish" was awarded to this firm, Mr. J. L. Gibson having charge of all the work. Mr. Lockwood complimented the Marine Pipe and Machine Works for having finished their contract in record time and also for their excellent work. This firm has had a very successful season and is forging to the front very rapidly having recently acquired control of the Puget Sound and Queen City Boiler Works of Seattle, and now being in a position to handle any class of repair work. In addition to their machine works, they own and operate a small dry dock, capable of handling any vessel up to 500 tons.

The contract for furnishing a new engine bed and crank shaft for the steamer "Camano" of the Island Transportation Company, was recently awarded to this firm. After the contract was let, the owners decided to convert the engine from a 9x22x14 compound to a triple expansion 8½x13½x22x14½ and the work thus involved was done by the Marine Pipe and Machine Works.

Further details of the "Duwamish" can be had from the illustrations appearing herewith.

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ENGINE ROOM-DREDGE "DUWAMISH."

TWIN SCREW STEAMERS "NARRAGANSETT" AND "MANHATTAN."

THE above vessels were designed by Frank E. Kirby and J. W. Millard for the Central Vermont Railway Company, for service on Long Island Sound, and have just been finished by the Harlan & Hollingsworth Corporation, of Wilmingston, Delaware. The vessels are of the years for Sound Sorvice with steal worth Corporation, of Wilmington, Delaware. The vessels are of the usual type for Sound Service with steel hull and wood superstructure. They are 332 feet long overall, 320 feet perpendiculars, 48 feet beam molded, 66 feet beam over guards, 21 feet 6 inches depth of steel hull, molded, and about 14 feet 6 inches draft.

The hull is built to Lloyd's Special Survey to Class 100 A1 for Sound Service, having bar keel, and double bottom avending from fore peak to after peak bulkheads.

bottom extending from fore peak to after peak bulkheads. The double bottom is framed with solid floors on alternate frames and brackets on the intermediate frames. The frames above the tank top are bulb angle with one wide hold stringer and web frames about 12 feet apart, these webs being in one piece from the tank top to the deck with the stringer intercostal between. The tank top is subdivided for three-fifths of the length by water-tight center keel, and has tanks about 24 feet long under the machinery and about 32 feet long forward and aft of same

The hold is subdivided by transverse water-tight bulk-heads built to rules, stiffened by bulb angle stiffeners bracketed to deck and tank top and spaced strictly in accordance with the latest requirements of the United States Local Inspectors.

Special attention has been given to the stanchioning of these vessels, having fore and aft girder under each of the decks, built of plate and angles for the main and lower decks, and I-beams under carlins for all the passenger decks, with stanchions of pipe of varying sizes directly over each other from the tank top to the upper part of the passenger quarters.

The crew's quarters or forecastle in the compartment

on lower deck are just aft of the fore peak, the quarters being fitted with metal berths and metal lockers, and of a capacity about three times that required by law,

thereby giving a large, airy, and comfortable space.
All the exposed bulkheads on this deck are of light steel extending from the main deck to the saloon deck. Abaft of the second-class quarters on the main deck is the freight space, which extends practically the full width of the vessel and is about 10 feet 6 inches clear height from top of deck to underside of beams.

Aft of the engine room is the quarter deck or lobby, a space 28 feet long by 50 feet wide, paneled in Honduras mahogany, the stanchions in this space being covered with mahogany columns, the deck laid with interlocking rubber tile, and ceiled overhead between the carlins with fixtures. On one side forward is the purser's room fitted in mahogany and the usual fittings of this type.

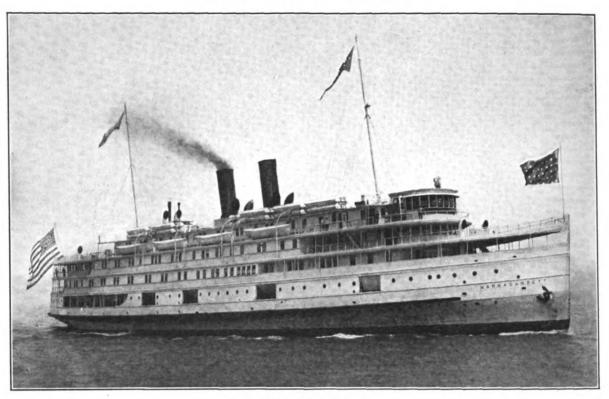
Abaft of the lobby is fitted a large dining saloon, which

room is paneled in pine with large compo board panels in the ceiling, and all painted enamel white, with large room. double windows all round the outside of the room, floor is tiled with rubber tiling, and the space is lighted

by means of a semi-indirect lighting system with large fixtures in the ceiling.

The saloon deck, gallery deck, and hurricane deck panels are all of Colonial type large panels of composite board and pine trim. All painting is of a color to harmonize with the design of the woodwork.

At the after end of the saloon deck house is fitted a ladies' retiring room and music room paneled in Prima Vera. On the gallery deck, immediately above, at the Vera. On the gallery deck, immediately above, at the forward end is an observation room paneled in oak and tiled floor. At the after end of the gallery deck house



S. S. "NARRAGANSETT."

is fitted a cafe and grill room with pantry attached. This room is treated in fumed oak having large leather panels, and the floor is of asbestolith in large blocks forming

There are eight special parlors having private baths and toilets attached, each of these parlors being fitted with brass beds and mahogany furniture.

The regular passenger staterooms have white enameled extra wide berths and hardwood floors, porcelain wash basin with running water draining overboard, nickel plated mirror, towel rack and fixtures, and folding seats, and some of these staterooms on each deck have a private toilet connected to each.

The heating is on the vacuum system having a vacuum pump in the engine room, which is connected to the exhaust line of the system and allows the use of the exhaust steam from the main engine.

There are fire bulkheads with large fire doors covered

with asbestos and sheet iron fitted on each of the saloon, gallery, and hurricane decks, with sprinkler system in the cargo hold and lower deck, and automatic fire alarm system throughout all cabins and spaces above the main deck.

deck.

Special attention has been given to the lighting and a semi-indirect method has been used in all large public places. Over the stairways large dome skylights have been fitted, which are lighted with Linolite, placed in coves in the deck. The stairways are all of mahogany with mahogany rail and white balusters.

The machinery consists of two sets of triple expansion, surface condensing balanced engines, each having four

The machinery consists of two sets of triple expansion, surface condensing balanced engines, each having four cylinders and four cranks, the H. P. cylinder is 23½ inches diameter, the Int. 37½ inches, and each L. P. 42 inches diameter, all having a stroke of 36 inches.

There are six cylindrical return tube boilers, 13 feet 2 inches inside diameter by 11 feet 6 inches long, constructed for a working pressure of 185 pounds per square inch. Each boiler contains two suspension type furnaces 48 inches inside diameter and 302 tubes 23½ inches diameter. 48 inches inside diameter and 302 tubes 234 inches diameter by 8 feet long. The boilers are arranged in groups of three with an athwartship bunker between the fire rooms, and are worked under a system of hot air forced draft, two Sirocco blowers placed one each side of engine room being provided for this purpose.

There are two smoke stacks and in the lower part of each is fitted a centrifugal form of spark arrester.

Each set of machinery is duplicate throughout, having independent condenser, air pump, circulating pump, and

The condensers are cylindrical, each confeed pump. taining 3600 square feet condensing surface.

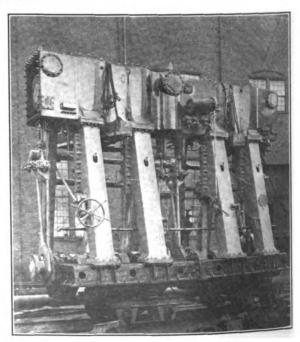
There are four hydraulic ash ejectors, two being fitted

in each fire room, the water supply being from pump in

The air pumps discharge into a feed water filter tank fitted with portable strainer plates, from there the water is discharged into a heater of the pressure type placed between the feed pumps and boilers, the water being heated by the exhaust steam from the auxiliary ma-

chinery.

On the trial the vessel made five double runs over a measured course at the mouth of the Delaware River, and made a mean speed of 1534 knots, and during the full power run the engines developed 5162 indicated horse-



ENGINES-S. S. "NARRAGANSETT."

THE NEW SISTER SHIPS "KATORI MARU" AND "KASHIMA MARU."

These new steamers, recently completed for the Nippon Yusen Kaisha's European mail and passenger services are of the following dimensions:

Length 510 feet; beam 61 feet; depth 36 feet 6 inches; gross tonnage 10,500 tons; displacement 19,200 tons; Speed 17 knots; classed 100 A1 at Lloyd's; first-class accommodation, 112 passengers; second class accommodation, 56 passengers; steerage accommodations, 186 passengers.

The "Katori Maru" is a triple screw steamer while the "Kashima Maru" is of the twin screw type. Both the steamers have complete cellular double bottoms, and are divided into numerous water-tight compartments, so that they are practically unsinkable. Sufficient number of lifeboats and other modern life-saving appliances are carried on board to meet the latest Board of Trade Rule, and for handling these lifeboats quickly and efficiently in time of emergency, Welin's patent davits have been adopted. The Clayton fire extinguishing apparatus is installed as a protection against fire.

The ships are thoroughly well ventilated, and are lighted throughout by electricity, an electric lamp being fitted to each first class berth besides the usual ceiling lamp in the cabin.

Disinfection is efficiently carried out by means of Clayton's apparatus.

Special care has been taken to meet all requirements of tropical climates. Every cabin is equipped with electric fans, and is unusually roomy. Fourteen of the cabins are equipped with two berths placed on a level at both ends of the room instead of one over the other as customary, thus removing usual inconvenience of selecting "upper or lower berth." These cabins measure 14 ft. x 7 ft. A luxurious suite of rooms is on promenade deck, consisting of a sitting room, a bed room (to be booked together or separately as the case may be) and a bath room with lavatory, the bed room being provided with Neptune's broad silver cot berth. The sitting room is decorated with beautiful sculpture in wood, and is also furnished with sleeping berths which are, however, so designed that all the evidence of their being such is concealed when not in use. All the fittings and furniture in these rooms are of the best artistic designs and taste. Eleven of the cabins are single berthed, and are specially fitted for those desiring privacy.

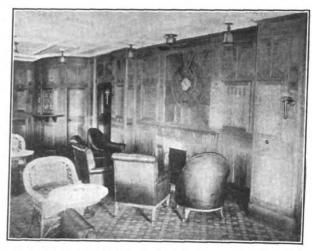
First-class dining saloon is situated on bridge deck amidships and has a liberal measurement of 46 ft. x 35 ft. Tables of various sizes are placed to suit parties of passengers, to accommodate two, four, five, six and ten persons. The spacious saloon is excellently lit by an enormous ornamental dome skylight, in addition to numerous rectangular stained glass windows on the sides. Its artistically sculptured wooden panels on all sides and equally beautiful ceiling are much admired.

Perhaps the greatest attraction on board is the large social hall which is situated on the promenade deck. Here one finds selections of European and Japanese arts.

The paneling is of polished satin wood having rich sculptures and inlaid works, the settees, numerous chairs and lounges being upholstered in elaborate brocaded silks. The ceiling is of carved wood, the windows being of figured stained glass, elaborated by beautiful brocaded silk curtains. Indeed, the whole fittings cannot fail to appeal to the taste of any art lover. It is furnished with

a grand piano, a gramophone, writing desks and a library of select authors.

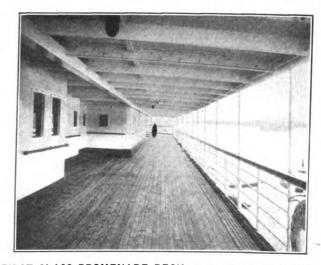
The spacious smoking room is also situated on promenade deck and is most tastefully finished. Its decora-



FIRST CLASS SMOKING ROOM-S. S. "KATORI MARU."

tion is associated with the respective names of the vessels, which are taken from two of the most celebrated Shinto shrines in Japan. Comfortable couches and arm chairs are provided, besides card tables. To make it homelike in the cold season, there is a delightful open fireplace.

The promenade deck is 145 feet long on either side, and is so spacious that almost any open air game can be played thereon. Cricket nets and materials for other



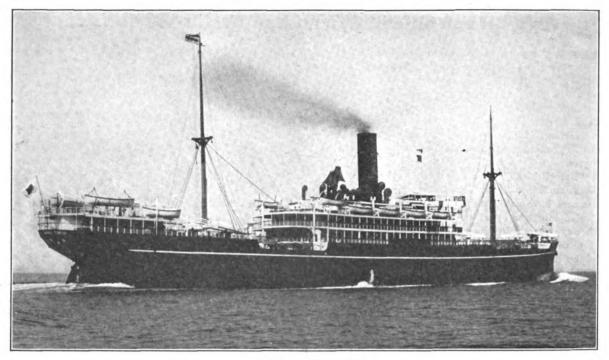
FIRST CLASS PROMENADE DECK-S. S. "KATORI MARU."

sports are provided. A portable piano is also provided for use by passengers on deck.

A large swimming bath is fitted on the upper deck which is a great attraction to passengers whilst on the voyage in tropical places.

Special care has been taken for the safety and comfort of children. The nursery, which is situated on upper deck, is most appropriately fitted, the walls being decorated in such a way as to please the fancy of children.

The decoration of the "Katori Maru" is entirely the product of Japanese artists, the design being based on



S. S. "KATORI MARU."

Secession style elaborated by the reproduction of the decorative arts of Fujiwara period. That of the "Kashima Maru," on the other hand, is essentially European, being supplied by the famous firm of decorators in London, Messrs. Waring & Gillow.

Steam is supplied from six single-ended cylindrical (Scotch) boilers at a pressure of 200 pounds per square inch.

In an article in "The Far East," Prof. F. P. Purvis describes the engine room of the steamship "Katori Maru" in part, as follows.

"From the boilers the steam passes first through 2 sets of triple expansion reciprocating engines, and from these again through the turbine and into the condenser. Hence the name by which the arrangement on this ship is known, viz., the 'combined system,' i. e., combination of reciprocating engines and turbine. There are in the 'Katori Maru' 3 shafts and 3 screw propellers. The centreshaft is driven by the turbine; the side shafts have the reciprocating engines, one set of 3 cylinders on the port side, and another exactly similar set of 3 cylinders on the starboard side. The high pressure steam from the boilers divides itself equally between the two sides, expanding from cylinder to cylinder until from an initial pressure of 200 lbs. per sq. inch above the atmosphere it is reduced to 0, or thereabouts, i. e., to atmospheric pressure. Then the turbine takes up the work. Receiving the steam at atmospheric pressure it still has about 14 lbs. to work with. At the exhaust end, opening to the condenser, there is a vacuum which varies with the barometric pressure. This vacuum, with a modern condenser, may approach rather close to an absolute vacuum; so that with the barometer standing at 29.9 inches the condenser vacuum may be fully 28 inches, equivalent to a pressure of some 14 lbs. per square inch. With this difference between supply and exhaust, the turbine is driven, and takes from the steam all the energy that is left in it."

During the next few months the total tonnage of the "Nippon Yusen Kaisha" will be increased from about

343,000 tons to 460,000 tons by the addition of six new cargo vessels of about 7,500 tons each, now building in Great Britain and Japan, and by construction of seven other vessels for passengers and freight, which are to be completed in 1913 and 1914. These vessels, with the dates of their completion and places of construction, are:

Vessel.	Ton	s. Tim	e. Yard.
Katori	10,500	October, 19	913Nagasaki.
Kashima	10,500	November,	1913Kobe.
Tokushima	6,500	July, 1913.	England.
Tottori	6,500	July, 1913.	England.
Suwo		October, 19	914 Nagasaki.
Yasaka	12,000	December,	1914Kobe.
Fushimi	12,000	February,	1915Nagasaki.

STATEMENT OF THE OWNERSHIP, MANAGE-MENT, CIRCULATION, ETC., of Pacific Marine Review, published monthly at San Francisco, California, required by the Act of August 24, 1912.

Name of— Post-Office Address. Editor, J. S. Hines, 24 Calif. St., San Francisco.

Business Managers, M. D. R. Hines and J. S. Hines, 24 Calif. St., San Francisco.

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Owners: (If a corporation, give names and addresses of stockholders holding 1 per cent. or more of total amount of stock.) J. S. Hines, 24 Calif. St., San Francisco.

Known bondholders, mortgagees, and other security holders, holding 1 per cent. or more of total amount of bonds, mortgages, or other securities: None.

Average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date of this statement. (This information is required from daily newspapers only.)

I. S. HINES.

Sworn to and subscribed before me this 3rd day of October, 1913.

(Seal) CHARLES FRANCEE,

Notary Public in and for the City and County of San Francisco, State of California. (My commission expires January 8th, 1914.)

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NEW STEAMSHIP SERVICES FOR BRITISH COLUMBIA

Trans-Pacific Lines.

It is reported that a steamship line will be established between Australia and Vancouver and Puget Sound ports by the Merchants & Shippers' Steamship Co. Three 10,000-ton freight vessels, now plying between England and South America, will be placed on this run during 1914 to connect with either the Great Northern or Canadian Northern Railways, and the company expects by competition to lower the present freight rate between the points mentioned.

The Union Steamship Co. of New Zealand has placed its order in Scotland for a new 16,000-ton vessel for its service between Australasia and American Pacific ports.

It is reported that two or three 16,000-ton vessels, modeled after the Pacific Mail liner "Korea," operated between San Francisco and the Orient via Honolulu, will be constructed for the Osaka Shosen Kaisha's trans- Pacific service. The keels of these vessels will be laid in the Kobe and Nagasaki shipyards and will be the largest ships for the Japanese mercantile fleet ever turned out in that country. It is expected that these vessels will be ready for service in two years. Pending the completion of these vessels, the company will place two 3,000-ton vessels on this run to obtain a share of the silk business handled by Canadian Pacific Railway ships. It is thought that these vessels will connect with the Great Northern Railway at Vancouver. As an indication of the importance of this silk trade, the "Empress of Asia" recently brought a \$3,000,000 silk cargo from the Orient to Vancouver for shipment to eastern ports.

New Oil-Burning Vessels.

The motorship "Siam," of the East Asiatic Co., the first motor vessel to come to Vancouver, will shortly leave Europe with a cargo for this coast, and will be followed by the "Annam," a similar ship. This company has in use four motorships and has six under construction. The "Siam" is of 55 feet beam, 410 feet length, 13,200 tons displacement, and 9,500 tons carrying capacity. Its two main Diesel engines develop 3,000 horse-power, and consumed on the trial trip 153 grams per horse-power hour (12 short tons per 24 hours for the two engines). Two auxiliary engines of 300 horse-power develop electric power for lighting the vessel, etc., and for operating the electric winches when in port.

An important undertaking by the Department of Public Works will be converting all its dredges and tugs in British Columbia to oil burners. The saving effected in vessel operations is expected to justify the large expenditures. Oil burners installed on the dredges "Mastodon" and "Fruhling," both large vessels that made the trip from Europe under their own steam, have proved very satisfactory.

Two new oil-burning vessels are being built in Great Britain for the Canadian Pacific Railway's triangular service between Vancouver, Victoria and Seattle. Each vessel will have capacity for 2,000 passengers, 13,500 horse-power, and 22½ knots speed, which will reduce the time for making the trip 30 minutes.

Proposed Norwegian Line-Boston and Pacific Line.

Capt. Otto Sverdrup, of Sanviken, Norway, when recently visiting Seattle, is quoted as stating that a large steamship company, in which he is interested, plans to start a line of four freight and passenger vessels between Norway and Seattle, making the usual calls along the Pacific coast. These vessels will bring cargoes of sardines, paper and pulp from Norwegian ports and

return with lumber, shingles, canned salmon, wheat, whale oil, etc. Capt. Sverdrup's present business is in connection with a fleet of whaling vessels operated by his company out of Seattle. He stated that on the opening of Panama Canal whale oil will be shipped to Europe in tank steamers instead of barrels, as is now done.

Representatives of the Boston Pacific line of steamers have been visiting this coast to study the trade offerings for the vessels of that line. They are principally interested in return cargoes, such as lumber, etc. Upon the opening of the Panama Canal the company's service will be inaugurated with four steamers of 4,000 to 5,000 tons, and it is stated that there are two 9,000-ton steamers now being built for this trade.

South American and Coastwise Lines.

Mr. Carlos F. DeBerna, representing the Peruvian Steamship & Floating Dock Co., of Callao, Peru, visited Vancouver last summer to ascertain the commercial outlook for making this the terminal port for a proposed new line of coast steamships. He also represents a large importing and exporting house, with agencies in the principal South American ports, and states that there is a good market for the cheaper grades of salmon in South America, likewise for flour and lumber. The service of the new line will include ports of call for 500 miles south of both the Atlantic and Pacific entrances of the Panama Canal and northwards, calling at San Francisco, Portland, Seattle, Victoria and Vancouver. At first a monthly schedule is intended until the trade warrants an increase.

FREIGHTS AND FIXTURES.

By Messrs. Page Brothers of San Francisco.

Since our last, a month ago, chartering has been active except in grain charters from the North to U. K. continent; the "Terpsichore" (sailer) being the only fixture @ 30/., Cork for orders, a drop of 5/. per ton from the last sail vessel fixed in October. For lumber we have the following steamers:

"Strathness" by Davies & Fehon, to load on Columbia River to Australian ports 5/3 delivery Japan with coal to Hawaiian Isles, redelivery Aus.

"Inverbevie" by A. F. Thane & Co. 5/. delivery Columbia River to Melbourne, and by the same firm the "Christian Bors" 5/10/2 to load at Eureka and the North, Newcastle/Melbourne Range.

"Harmattan" by Am. Trading Co., delivery Newcastle to this Coast and return to Australian ports 5/3 one round, 5/. two rounds, 4/4/2 three rounds.

"Rothley" and "Lord Sefton" both reported fixed by Gibson & Co. at about 5/. to 5/6 delivery North and redelivery Australia.

"Strathalbyn" by Hind, Rolph & Co. @ 4/1/2 on the D/W, reported for 3 years for general trading in Pacific Ocean, options of U. K., etc.

"Bilbster" by J. J. Moore & Co., 4/9 on the round delivery and redelivery Australia.

"Lord Erne" by Scott, Henderson & Co. @ 5/4/2 delivery this Coast, redelivery Sydney, Febry. loading.

"Earl of Douglas" by Grace & Co., delivery and redelivery Chile at 4/4/2 on D/W.



"Vennachar" 5/. on the round delivery Japan and redelivery Orient by Royal Mail Line; also

"Orteric" on private terms, trip over from the North to Hongkong or Manila; and

"Beachy" 4/10/2 delivery Japan in ballast to this Coast and loads at the North for U. K. via Straits of Magellan. "Craighall" 4/9 delivery and redelivery Japan by Portland Flg. Mills Co.

"Messina" rechartered by Dodwells from Pacific Mail, general cargo to 2 ports Japan, \$28,000. Owing to the sharp advance in Texas cotton, prices caused by the Government report of our cotton crop being 25% short, Japanese went to India for their cotton, hence cotton stopped coming and this steamer had to seek another

"Harpagus" 72/6 stg. per 1000 ft. lumber from here and Brit. Columbia to 2 ports So. Africa 73/9 if three ports discharge.

'Atogasan Maru" 3/9 delivery and redelivery Japan by Mitsui & Co. to this Coast and return.

"Kinross" by Balfours 4/3 delivery Norfolk, Virginia,

to this Coast with coal for the U. S. Gov't and redelivery Australia or China.

Sailer lumber freights to West Coast have been most active since our last, owing to a good demand and also short sales based on freights at about 42/6 per M. They advanced quickly from the latter figure to 47/6, then to 52/6 and 55/. for a direct port. In one case for specially ordered cargoes two small sailers were taken @ 60%. Then these high rates commenced to attract the attention of foreign vessels and one or two of these were taken @ 48/9. We quote rates to-day steady at 47/6 direct nitrate port.

Freights for Australia show no proportionate advance or activity. For United Kingdom Messrs. Hind, Rolph were fortunate indeed in chartering their "Drummuir" @ 85/. per m. ft. 2 ports-quite a contrast to same country @ 30/. per ton for wheat.

The weakness of freight rates all over the world have naturally affected this market and lowered rates from here, where statistically they should have commanded good stiff rates.

THE LA FOLLETTE BILL.

By ROBERT DOLLAR.

THE bill introduced by Senator Nelson had so many amendments tacked to it that in the form it passed the Senate, it appeared an exact duplicate of the vicious Wilson and La Follette bills discussed at the last session of Congress. The La Follette bill, as it can appropriately be termed, was rushed through the United States Senate when a handful of members were present and it passed when there was a bare quorum. At this writing it looks as if it will be railroaded through the House. I will confine my remarks more particularly to the effects of the bill on shipping rather than a discussion of the various clauses, as they have been fully discussed.

Insufficiency of Food.

In the humanitarian clauses of this bill I will take second place to no man, not only in advocating, but in giving the men better treatment in accommodations and food, and at the end of this article I publish a copy of the bill of fare in use on every steamer on this coast. I publish this to refute the statement that Mr. Furuseth and members of Congress have made that our men are insufficiently fed. I leave the public to decide between this menu and the request in the bill that they get a quart more water and an ounce more butter per day. This only shows to what extremes they go to get sympathy.

Payment of the Seamen.

Then they ask to get paid four days after discharge. I asked the Senate Committee to change that to two hours after the bank opens. This was also put in to make the public believe that we keep our men waiting for their money, which is not the case.

We have no objections to providing wash places.

Two exits from the forecastle in small vessels is impracticable. In large vessels it is all right.

We do not object to paying seamen advances.

Allotments.

Making allotments to crews of foreign steamers is an injustice, as it provides that a sailor can not provide for his family which is in a foreign country because the act provides that the Commissioner must examine the parties where advances are made. By this act foreign sailors on their own ships when they come to this country their contract is canceled, and they demand half their wages, and the captain cannot deduct what has been advanced them in their own country: provision is made that the Sailors' delegate can go on board and induce them to desert, the intention being to get the entire crew to desert and join the Sailors' Union and ship out at American wages. Think of the danger to life in shipping a strange crew who never saw each other, every time a vessel sails from an American port. How can the lives of passengers be protected by such regulations, as nothing counts like team work in time of disaster? Still the title of the Act is to promote safety at sea.

Asiatic Crews.

Then Section 12 is drafted to prevent employment of Asiatics, claiming they are not efficient and that shipowners hire them because they are cheap. Both of those statements are incorrect. I ask any man to go on board of one of my steamers manned by Chinese and see the excellent condition of the ship. Then go on board of one of my steamers manned by white crew. It requires no expert to see the clean, neat condition of the former and the filthy, untidy condition of the latter. The price cuts no figure where your property is well kept up.

Where the injustice comes is, a British cargo steamer with no American citizens on board, but with a crew of British subjects who could not pass the language test being refused clearance, and the advocates of this clause will see to it that no Asiatic will ever pass the language test no matter how much English he can speak.

Manning.

Then the manning of ships with men who have served three years at sea rejecting all for boatmen except sailors, when it is a fact that many men in the other departments of a ship are better boatmen than the Conclusive evidence was furnished Congress as to this by tests on the Great Lakes. Then power is given any irresponsible citizen to tie up any ship. Congress does not understand what this means, otherwise they would not have passed it. What would you think of giving one man lower to shut up a factory with a thousand people employed because he thinks the law is not complied with?



Then this Act applies to all foreign nations. Think of this country that carries less than one per cent. of the world's commerce making laws to regulate the nations who are doing the other 99 per cent. There may be some argument used to make this Act apply to foreign steamers carrying American passengers, but there can be no valid reason advanced to make it apply to steamers carrying cargo only.

So I cannot do better than to repeat what I wrote Senator La Follette, "That his name will go down to posterity as being the man who drove the last nail into the Merchant Marine Cossin." Even radical Labor Union men admit this. So what the seamen will gain by absolutely prohibiting shipowners from operating American ships in the foreign trade is very hard to understand. One of the first effects of this law will be to compel the Pacific Mail's five steamers and the "Minnesota" to change their flags as it is unreasonable to expect the railroads will continue to put up the money to run those vessels at such a heavy loss, in endeavoring to compete with their Japanese competitors.

Abrogation of Treaties.

Then we have to make new treaties with sixteen different nations, which will certainly bring reprisals. They cannot touch our ships as we have practically none left in the foreign trade, but there are other ways they can reach us, that will be even more effectual. The discipline on ships on this coast is now so bad that the captain is not master of his ship any more and all the owners are carrying full union crews except the Hammond fleet.

Accidents Raising Insurance Rates.

In this connection a meeting of the shipowners and insurance men was held in San Francisco last week to consider what was to be done on account of the great number of shipwrecks that have taken place on this coast recently. The situation has got so acute that several of the British companies refuse to take any more risks on American vessels and the San Francisco and London companies that are insuring are charging one and one-half per cent. more than two years ago. In fact, one and one-half per cent, more than the British owners are paying.

Discipline.

The discussion brought out this, that in the opinion of those present, and this is the general opinion of all shipowners, that on American steamers on this coast the alarming number of casualties is to a great extent caused by insubordination and lack of discipline of the crews, the men refusing to keep a good lookout and actual refusal or complaint about heaving the lead so often.

Lack of Protection to Life.

The whole aim of this bill is to put the entire control of the crew in the Labor Unions thereby making discipline impossible. Can the advocates of the bill tell us where protection to human life comes in when insubordination reigns supreme?

The public has no idea the risks they are running, if they did the conditions of this bill could never be enforced.

To substantiate what I have said, I quote from Mr. La Follette's speech (see the Congressional Record of October 21st, page 6388):

The Men and Not the Officers Responsible.

"It is the men on deck who see, who know, who are there to respond and to meet conditions, the men who are trained to study the face of the ocean and the sky and to interpret their mening. Those are the men who are charged and must really be charged with the safe navigation of the vessel."

By following this language closely you will see that Mr. La Follette ignores the ability of the captain and officers entirely and puts the entire responsibility on the sailors. While the public will not take this seriously it is serious. When we consider that Mr. Furuseth told Mr. La Follette what to say as in the first part of his speech he tells us he got his information from that source, so we must come to the conclusion that Mr. Furuseth through his unions intends to get complete control of the ship and on this coast we have to admit that is about the case already.

How are the officers to maintain discipline and get their orders carried out when, in the words of Mr. La Follette, "Those are the men who are charged with the safe navigation of the vessel"? Note that the officers are completely ignored and when the officers give an order they will receive the same reply as I have heard recently, to "go to H-1." It has been discreetly kept from the public by both parties, but at this critical stage I think it is well to tell the truth, that generally a vessel is not abandoned until she is unmanageable and when a gale of wind is blowing and the vessel is rolling helpless in the trough of the sea. As in the case of the "Volturno" there is no device nor skill on earth that can launch a boat successfully. Messrs. La Follette and Furuseth to the contrary notwithstanding. In the four boats that were launched from this vessel not one person is left to tell the tale, and we are told that the very best boatmen on the ship were in the boats, including the first and second officers.

The Last Appeal for a Merchant Marine.

As a last appeal to our Senators and Congressmen who are responsible for having legislated our foreign Merchant Marine off the ocean: We did not expect, at this time, legislation to enable us to take our rightful place in the world of commerce but we did hope that no bill would go through that would remove the last vestige of hope of ever seeing our flag in foreign ports. Consider well what you are doing before taking such drastic and radical steps. Several of you told the writer that to some extent we, the shipowners are to blame as we did not keep you informed. So we now ask you to give the merchants and shipowners of this country a last opportunty of being heard. By your acts, we consider the case of the Merchant Marine in the foreign trade absolutely hopeless and this appeal is only to ask you to hear us on behalf of our vessels in the coastwise trade.

Here Is What We Feed the Crew. Crew Menu.

When stores or market will not permit of items mentioned below, substitutions will be made.

> SUNDAY Breakfast. Rolled Oat Mush

Ham and Eggs Hot Cakes and Syrup

Jacket Potatoes

Bread and Butter

Coffee

Dinner.

Roast Beef String Beans Oyster Soup Lamb Stew with Green Peas Mashed Potatoes

Pickles Bread and Butter Coffee Plum Pudding with Sauce

Supper

Beef Steak and Onions

Fried Potatoes Bread and Butter Fruit

Sliced Tomatoes Ginger Bread Tea



Meat Stew

Jacket Potatoes

Generated on 20 Public Domain,

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Dinner.
              Vegetable Soup
Roast Pork with Apple Sauce
Boiled Beef Spanish
                                         Stewed Lima Beans
Boiled Potatoes
                     Bread and Butter
Sago Pudding
Coffee
                            Supper
         Mutton Chops
                                               Sausage
                                            Bread and Butter
Baked Potatoes
                       Stewed Prunes
Tea
                    Cake
                         TUESDAY.
                          Breakfast
                      Corn Meal Mush
                                              Jacket Potatoes
Liver and Bacon
                   Hot Corn Bread
Hot Cakes with Syrup
                            Coffee
                            Dinner
                Pea Soup
Corned Beef and Cabbage
Codfish, with Pork Scraps
                 Jacket I
Sliced Tomatoes
Rice and Raisin Pudding
Coffee
Cauliflower
                                               Jacket Potatoes
         Pickles
              Supper
Hamburger Steak and Onions
Fried Potatoes
Fresh or Canned Fruit
Tea
Pork Chops
                       WEDNESDAY
                          Breakfast
                      Rolled Oat Mush
                                               Jacket Potatoes
Beef Steak
         Hot Rolls
                                                 Coffee
                            Dinner
              Tomato or Rice-Tomato Soup
Roast or Boiled Mutton
Meat Curry and Rice
Stewed Corn
                                                         Pickles
Potatoes
              Mince Pie
                                            Coffee
                            Supper
                                Corned Beef Hash
Tomatoes
           hops
Fried Potatoes
Stewed Peaches
Tea
         Chops
                         THURSDAY
                           Breakfast
  Rolled Oat Mush
                                             Ham and Eggs
                    Hot Cakes with Syrup
Coffee
                             Dinner
                           Bean Soup
                                          Veal Fricassee
       Pork and Beans
         Mashed Potatoes
                                         String Beans
            Brown Bread
                                              Pickles
                        Plum Pudding
                             \mathsf{Coffee}
                             Supper
               Hamburger Steak with Onions
   Corned Beef Hash
                                              Fried Potatoes
                Fruit
                               Cake
                                              Tea
                            FRIDAY
                           Breakfast
                              Mush
     Veal Cutlets
Hot Rolls or Biscuits
                                           Jacket Potatoes
                             Coffee
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MONDAY

Breakfast. Fine Hominy
Salmon Bellies or Tongues and
Sounds, with Drawn Butter

Hot Rolls or Biscuits and Butter Coffee

Dinner Clam Chowder Codfish, Family Style Baked Macaroni Boiled Onions Jacket Potatoes Mashed Yellow Turnips
Bread Pudding
Coffee Supper Pork Chops Codfish Hash Baked Potatoes Sliced Tomatoes Stewed Apples Cake SATURDAY **Breakfast** Mush Potatoes Chops Hot Cakes Hot Corn Bread Coffee Dinner Soup Corned Beef and Cabbage Curried Meat and Rice Green Peas or Corn Boiled Potatoes Apple or Squash Pie Coffee

Supper Beef Steak and Onions Corned Beef Hash Fried Potatoes Stewed Prunes

Lunch When working cargo 9 a. m. and 3 p. m.
One kind of Cold Meat
Bread and Butter
Coffee Cheese

Bread to be served at all meals except when hot rolls are served. When in port, fresh fruit to be served when obtainable; also fresh vegetables, when in season.

Affidavit.

City and County of San Francisco, State of California.

W. F. Sullivan, being first duly sworn, deposes and says:

That he is now and has been for several years past the Secretary of the Shipowners' Association of the Pacific Coast, a corporation having its offices in the Santa Marina Building, San Francisco, California, and including in its membership a majority of the shipowners and managers operating years because we along the Pa-

cluding in its membership a majority of the shipowners and managers operating vessels coastwise along the Pacific Coast of the United States;

That the "Crew Menu," a copy of which is printed above, was prepared by the Shipowners' Association in the year 1908 and submitted to the Sailors' Union of the Pacific, a union embracing the vast majority of sailors engaged in coasting vessels on the Pacific Coast, and whose secretary and guiding head is, and has been for many years, Mr. Andrew Furuseth;

That the Sailors' Union refused to abide by any "Crew Menu" whatever, claiming the right (having the power) to dictate to shipowners the quantities and varieties of food to be served them;

food to be served them;

That the only reason shipowners had for wishing to establish a fixed menu was to make uniform the provision scale in coasting vessels in order to avoid the trouble and annoyance caused by some owners handling this matter with greater or less liberality than others.

No vessel trading coastwise on the Pacific Coast has a less liberal scale than set forth in this "Crew Menu," and needless to say this many fives a scale for more

and needless to say, this menu fixes a scale far more liberal than that provided by law.

(Signed) W. F. SULLIVAN. Subscribed and sworn to before me this 5th day of November, 1913. ROBERT J. TYSON.

PACIFIC COAST STEAMSHIP COMPANY.

Crew Bill of Fare

FRIDAY SUNDAY Breakfast Boiled and Saute Potatoes
Hot Bread
Coffee Breakfast Mush and Milk Codfish and Cream Beefsteak Corned Beef Hash Scrambled Eggs
Boiled and Lyonnaise Potatoes
Hot Bread
Coffee Mush and Milk Beefsteak Liver and Onions Fried Bacon Chowder
Baked Fresh Fish
Roast Mutton
Lima Beans
Boiled Potatoes
Pickles
Bread and Butter
Coffee Dinner Baked Fresh Fish
Corned Pork and Cabbage
Roast Beef
Stewed Beets
Poiled Potatoes
Pickles
Bread and Butter
Pie Coffee Dinner Scotch Broth
Beef Saute
Roast Mutton
Stewed Beets
Boiled Potatoes
Pickles
Bread and Butter
Plum Pudding and Sauce
Fruit
Coffee Celery Soup
Roast Beef
Mutton Stew with Vegetables
Lima Beans
Boiled Potatoes
Pickles
Bread and Butter
Plum Pudding and Sauce
Fruit
Sur Supper Chops
Codfish Hash
Irish Stew
Cold Meat
Boiled Potatoes Bread and Butter Stewed Fruit Cake Supper Chops
Hamburger Steak
Cold Meat
Boiled Potatoes
Bread and Butter Stewed Fruit Gingerbread Coffee SATURDAY Breakfast
Boiled and Lyonnaise Potatocs
Hot Bread
Coffee MONDAY Mush and Milk Beefsteak Liver and Onions Tripe Spanish Breakfast
Boiled and German
Fried
Hot Bread
Coffee Vegetable Soup

Vegetable Soup

Corned Pork and Cabbage

Braiscd Ribs of Beef Spanish

Stewed Parsnips

Boiled Potatoes

Fickles

Bread and Butter

Coffee Pt

Supper Mush and Milk Beefsteak Corned Beef Hash Stewed Tripe Spanish Rice Tomato Soup
Baked Meat Pie
Roast Beef
Stewed Carrots
Boiled Potatoes
Pickles
Bread and Butter
dding Coffee Split Pea Soup
Boiled Beef Spanish
Macaroni and Cheese
Stewed Celery
Boiled Potatoes
Pickles
Bread and Butter
Coffee Celery Soup
Spaghetti au Gratin
Roast Beef
Stewed Carrots
Boiled Potatoes
Pickles
Bread and Butter
Coffee Dinner Pudding Bread and Butter Stewed Fruit Gingerbread Coffee Beefsteak
Pot Pie
Cold Meat
Boiled Potatoes Pie Supper Bread and Butter Stewed Fruit Cake Beefsteak and Onions Mutton Pot Pie Cold Meat Lyonnaise Potatoes Tea The Chief Steward may substitute one dish for another with the permission of the Captain. Coffee Tea TUESDAY Breakfast

Boiled and Saute Potatoes

Hot Bread

Coffee NOTE:-14 different dinners for 14 day voyages. Mush and Milk Fried Fish Beefsteak Liver and Onions Vermicelli Soup
Corned Reef Hash and Cabbage
Hungarian Goulash
Stewed Tomatoes
Boiled Potatoes
Pickles
Bread and Butter
Podding Coffee Pt
Supper PACIFIC COAST STEAMSHIP COMPANY Vegetable Soup
Veal Fricassee
Roast Beef
Lima Beans
Boiled Potatoes
Pickles
Bread and Butter
ting Coffee DECK OFFICERS' AND ENGINEERS' MESSROOM SATURDAY Breakfast Cereal and Mush Fried Fish Beofsteak Pork Sausage Tripe in Cream
Boiled and Fried Potatoes
Hot Rolls
Coffee Tea Pudding Cold Meats
Pickles and Beets
Pie Lemon Buns
Stewed Fruit
Coffee Bread and Butter Stewed Fruit Gingerbread Coffee Lunch Chops
Ribs of Beef Spanish
Cold Meat
Boiled Potatoes Mutton Broth
Beefsteak to Order
Frankfurter and Sauerkraut
Rice Croquettes with Jelly
Mashed Turnlps—
Boiled Potatoes Tea WEDNESDAY Breakfast
Boiled and Lyonnaise Potatoes
ons
Coffee MONDAY Mush and Milk Beefsteak and Onions Corned Beef Hash Sausage Breakfast
Fried Tripe in Batter
Boiled and Fried Potatoes
Hot Rolls
Coffee Tea Cereal and Milk Fried Fish Mutton Chops Corned Beef Hash Corned Been Soup
Corned Beef and Cabbage
Meat Curry and Rice
Stewed Turnips
Boiled Potatoes
Pickles
Bread and Butter
Ple
Coffee Veal Broth
Brisket of Beef and Horseradish Co
Meat Curry and Rice
Stewed Beets
Boiled Potatoes
Pickles
Bread and Butter
Pie Coffee P Lunch

Assorted Cold Meats
Pickles and Beets
Pickles Cup Cakes
Stewed Fruit
Tea Vegetable Soup
Boiled Beef Spanish
Macaroni and Cheese
Baked Sausage and
Mashed Potatoes
Stewed Celery—Boiled Potatoes Bread and Butter Stewed Fruit Cake Beefsteak Mutton Stew Baked Pork and Beans Cold Meat Boiled Potatoes THURSDAY Dinner Soup-English Beef Broth
Baked Fresh Fish
Fricassee of Chicken
Orange Fritters
Roast Beef
Carrots and Peas-Mashed Potatoes
Plum Pudding, Hard
and Brandy Sauce
Pie Fresh Fruit
Cheese and Crackers
Coffee Tea Coffee Tea THURSDAY Breakfast Mush and Milk Beefsteak Fried Ham Boiled Eggs Boiled and German
Fried Potatoes
Hot Bread
Coffee FRIDAY Dinner Soup—Bisque of Crab
Salt Codfish, Family Style
Corned Pigs Head
and Sauerkraut
Irish Stew
Apple Fritters
Roast Veal with Dressing nner
Stewed Celery—
Mashed Potatoes
Cabinet Pudding, Cream Sauce
Pie Fresh Fruit
Cheese and Crackers
Coffee Tea Dinner Red Bean Soup
Spachetti au Gratin
Rosat Beef
Saute Parsnips
Boiled Potatoes
Pickles
Bread and Butter
Plum Pudding and Sauce
Fruit Celery Soup
Macaroni and Cheese
Roast Beef
Stewed Parsnips
Boiled Potatoes
Pickles
Bread and Butter
Plum Pudding and Sauce
Fruit Coffee In the next issue of the Pacific Marine Review an ac-Supper curate statement will appear concerning the report that Hot Corn Bread Stewed Fruit Coffee Beefsteak and Onions Cold Meat Lyonnaise Potatoes Bread and Butter the General Petroleum Company has been sold to a British syndicate headed by Mr. Andrew Weir.



AND S. B. 136 PASSED THE SENATE.

2024-07-25

The following is of real interest, showing as it does just how biased the Senate must have been to have passed the vicious La Follette Bill in spite of all worthy and sensible arguments to the contrary.

Legislation dealing with such vitally important matters as concern the world's shipping should certainly not be dealt with in such a hasty manner. The results following the passage of such legislation as contained in S. 136 can be none other than disastrous to the entire shipping industry.

Surely, with such grave issues at stake, the time of the United States Senate could have been profitably employed in a more prolonged consideration of same.

The following is taken from an account of what occurred prior to the passage of S. 136 in the United States Senate.

We regret that lack of space prevents us from publishing the entire hearings on this subject.

The following remarks were made by Senator Bacon, of Georgia:

Mr. BACON. Mr. President, some reference was made to what might be the desire of the Senator from Wis-consin as to whether or not it is to conclude the consideration of the bill to-night. I wish to state very frankly to the Senator the reason for my inquiry.

I regard this as an extremely important bill. It is one that affects our relations with every maritime nation, and very seriously affects our treaty obligations. Of course we can abrogate them. I do not mean that they are insurmountable. I think, however, that in the tney are insurmountable. I think, nowever, that in the case of a bill of this importance, with its far-reaching consequences, when a notice has been given which is tantamount to saying that a vote will be taken at 4 o'clock to-morrow, it would hardly be advisable to take it with a very small attendance of Senators this afternoon. I myself should prefer that the bill should go over until to-morrow for that reason.

Mr. LA FOLLETTE. I believe the passage of this bill at this time is the most important work in which the Senate of the United States will engage at this extra session of Congress. Probably not all Senators will agree with me in that. Other legislation deals with basiness interests. This legislation deals with the with business interests. This legislation deals with the liberty of 130,000 American citizens and with the safety of life of all the people of our country and of other countries who cross the ocean in so far as they are to be affected by it. I cannot conceive of anything more important than addressing ourselves seriously to the perfection of this legislation, and to advancing it as rapidly as possible toward a place on the statute books.

Just one word further on the subject of the way in which the bill affects our relations with foreign Gov-ernments. Provision is made here for the President to give notice to foreign powers. There is not in the provisions of the substitute—and I ask the attention of the Senator from Georgia to this part of my remarks-There is not in the proanything like so harsh an interference, if it be termed an interference, with foreign vessels as in the bill which was reported from the committee and in the bill which was reported by the Senator from Ohio (Mr. Burton) in the last Congress.

Mr. BACON. As the Senator has done me the honor to ask for my special attention to that remark, I wish to say very frankly that it would take me much longer than to-morrow to make the investigation of this bill which I should like to have the opportunity to make and which I should feel under obligations to make if I were on the committee or had been especially the in connection with the proposed largical trees. active in connection with the proposed legislation. active in connection with the proposed legislation. I have not, however; and I am not making that remark with a view of any suggestion for its postponement beyond the time when it was anticipated that we would be called upon to vote upon it. I did think I would have to-night and to-morrow for the purpose of looking through the bill to see whether or not there were any amendments which I thought it important to offer, solely upon the one feature which was suggested in the remark I made before.

Mr. President, it is an extremely serious thing when we undertake to legislate as to conditions which are not directly under our jurisdiction but which relate particularly to the jurisdiction of other countries over their own affairs, over their own ships, and over their own nationals, as they may be called in diplomatic language, people of their nationality, subjects and citizens of other nations. I say it is a very serious thing when we undertake to take care not only of our own but when

we undertake to take care not only of our own but when we undertake to say that which according to the general law of nations is left to the people themselves who have the authority and the responsibility. That is a general principle of international law.

Not only so, Mr. President, but when we ourselves have gone further and in solemn treaty stipulations provided that we will do so, I say it is a most serious proposition. I confess I am not in a position to discuss it, and I do not expect to discuss it, because I would not undertake to discuss a matter so serious as this without a degree of preparation which I have not had the opportunity now to make. But I do think it is important that we should look carefully through this proposed legislation, and without sacrificing any of the great purposes which are influencing those who are proposed legislation, and without sacrificing any of the great purposes which are influencing those who are active in it, and whose motives and purposes must be applauded, and which I do applaud, I want to see whether or not, without sacrificing those, we can keep ourselves in the limits of what has heretofore been recognized as a rule of international law and within the limit of our solemn treaty obligations.

Mr. President, we have enough of present and antici-pated friction now with foreign nations upon several If we can adopt legislation here which will questions. advance and promote the great purposes which are in view and at the same time not further increase the probability of friction between this Nation and other nations, I think it is important that we should do it.

Mr. FLETCHER. The proposition of this bill is not in anywise to restrict the liberty of any foreign citizen. The proposition is here that a foreign citizen or a national—a citizen of any country—coming to our shores shall be a free man, and our courts shall not be open to deprive him of his liberty. I do not presume that foreign governments could blame us for that.

Mr. BACON. The Senator will recognize that that is only one of a great many propositions in the bill. If that were the only one, the bill might stand without the slightest objection, but there are a great many other provisions which do conflict with our treaty stipu-

lations.

Mr. President, in view of our great responsibility and in view of our great interests which are involved in our relations with other nations, I submit to the Senate. whether it is not of the utmost importance that the most careful scrutiny should be had as to each of these

Mr. President, it is a matter of extreme solemnity, it is a matter of great importance, it is one involving great consequences when in these three volumes of treaties with other nations, as we have them, and throughout those treaties with every important nation in the world there are provisions which this bill antagonizes and in a degree overrides.

Mr. President, recognizing to the fullest the high purpose of those who desire this legislation, sympathizing with it to the fullest, desiring the accomplishment to the fullest that can be done with safety, ought we not

to pause when such a momentous proposition is presented to us as that which this bill does present?

I may be trespassing too far upon the time of the Senator. I do not know whether he has the floor or I.

We were both upon it. I recognize his courtesy, of course, if he has the floor.

I know, Mr. President, that there is scarcely any question which could be presented for the consideration of the Senate in the discussion of which there could be involved a greater amount of true, genuine, unaffected sentiment and sympathy, and in which the great interest of human life could be presented so directly and so fully as in the propositions which are before us in this bill and the purposes which are at the bottom of every-thing that is in the bill. There can be nothing to appeal to human sentiment and human sympathy



greater than that which affects human life unless it be that other thing which is involved in the bill, which the Senator from Florida (Mr. Fletcher) suggests, and that is human liberty. Here we have a bill which must command the sympathy of every man who listens and who is called upon to act because it affects human life and affects human liberty. The fact that it does appeal to every generous heart is a fact which should make us the more cautious that in yielding to that which thus appeals so strongly we may not do something else

which may be a great evil.

Mr. President, I do not hesitate to say that with my other occupations I would want several weeks to consider this bill, and if I had no other occupation I would want several days to study the bill to see the effect which it will have upon our relations with foreign countries, and I do not think they are to be disregarded. The world has gotten smaller. We have gotten closer to foreign nations. We are in more direct and intimate communication with them every day. The issues affecting our relations are more vital than they were in former days when the world was larger, when it took a month to cross the ocean, and when it took that long to get a message across the ocean.

I know, Mr. President, that something has been said about the fact that we have entered into an agreement with foreign nations to have a conference on this subin a convention which meets in London next month, a conference which is so important that it is a little matter of pride between the United States and Great Britain as to which one it was that extended the invitation. Each of them claim to have extended the invitation. While I recognize that that might lay upon us an obligation not to attempt to anticipate it, still I do not regard that as a vital argument or one which imposes an insuperable barrier to our proceedings, because, in the first place, I do not suppose it is anticipated that this bill can become a law, if it should pass the Senate, before that conference meets. It would imply by the action of the Senate and would indicate simply be the action of the Senate and would indicate simply be the action of the Senate and would indicate the views of the Senate, and if those views were subsequently not in exact harmony with the action of the conference in London, whether it were a bill simply which had passed the Senate or whether it were a bill which had passed the other House and received the sanction of the President, there would be ample opportunity for we if we can proper to conference legis tunity for us, if we saw proper, to conform our legislation to the suggestions of that conference. So I do not think that is an insuperable obstacle, although I rather think it is but proper deference that we should await its action. So it is not with that view, Mr. President, that I am troubled.

Mr. President, it is a serious thing to abrogate a treaty with another nation. It is a serious thing after we have entered into a solemn treaty obligation with another nation to set that aside without consultation or notice to the other nation. It is bad enough with men in their private, personal relations, entering into contractual or other obligations that are mutual, for one man to set up and without notice to the other one or conferring with him arbitrarily tear up a paper and or conterring with him arbitrarily tear up a paper and throw it away. But it is an infinitely more serious matter when nations representing great peoples have entered into treaty obligations, some of them which have lasted nearly a hundred years, and which have in them no stipulation that a certain notice shall be given before abrogated occause no anticipation is had that there will be an abrogation—it is a most solemn thing. I say without notice to one of those nations or without say, without notice to one of those nations or without asking them to confer about it or to agree with us about it, to exercise the power which we undoubtedly have by legislative act to destroy that treaty.

Mr. President, it has got to be a very extreme case before I will do it. I have voted for the abrogation of the conference of th

but one treaty by statutory enactment, and that was the case of the Russian treaty, and there had been for a long time negotiations between this Government and the Russian Government over the points at issue, on account of which we did abrogate it. But in this instance we have not called on a nation to meet with us and confer as to the question whether or not we will destroy these treaties. There is not a single one of them to whom we have done the courtesy to say that we propose to abrogate a treaty.

Mr. President, I venture the assertion that there is not

a Senator on this floor who will stand in his place today and say how many nations there are with whom we have treaties which will be abrogated by this bill if it is passed and specify what nations they are. If a Senator will stand in his place and admit that he has made the investigation and does know, I will most cordially withdraw the suggestion. Is there a Senator here who can stand in his place in the Senate and state how many treaties there are that this Government has with foreign nations with which this proposed bill will conflict and treaties which, if this bill is passed, will be abrogated? If there is no Senator here who can do that, are we proceeding with the care, with the caution, with the deliberation which should characterize us when we deal with such a solemn subject and with such farreaching responsibility?

Mr. BRANDEGEE. If the Senator is in possession of the information, I am interested to know the number of treaties that would be affected by the bill.

Mr. BACON. I am very frank to say to the Senator from Connecticut that I am not in possession of it. I did propose to ascertain, if I had the opportunity until to-morrow, possibly. I have the book here which I intended to look through. I did not anticipate this material to the propose that the propose that I will say year. ter would come up this afternoon; but I will say very frankly to the Senator that, without having made the investigation, I am of the opinion that it will affect our treaty with every important maritime nation of the

Mr. STONE. In what way?

Mr. STONE. In what way?

Mr. BACON. By directly doing what the treaties say we shall not do. That is a reply to a sotto voce inquiry from the Senator from Missouri as to what way. I will give the Senator one illustration. I confess I have not examined this bill in detail, because I knew it had been before the Committee on Commerce, a committee composed of as able Senators as are to be found in this Chamber, and I supposed, of course, that all these matters have been carefully examined into. Doubtless they have been; but the committee have not reached the conclusion which I had anticipated that they would as to some matters. If some Senator will ask me how, I will give him one illustration. I will give him one that I find in looking at the bill on the surface. It is a principle of international law, recognized face. It is a principle of international law, recognized as a principle of international law, not only recognized generally as a principle of international law but recognized and laid down in the decisions of our Supreme Court, that as to everything in regard to the internal affairs of a foreign ship, excepting only those things which concern our peace and good order in our own harbors: as to all else foreign nations are to make the laws which shall govern and regulate those affairs in those ships.

Mr. President, there are a great many things in this bill of which I approve. I repeat, the purpose of it I most heartily approve, to wit, the double purpose of safeguarding the lives of people at sea and also, so far as possible, ameliorating and improving the condition of sailors. When the Senator comes to deal with our property of the presume as far as he will go I presume as far as he will in the of sailors. When the Senator comes to deal with our own ships I will go, I presume, as far as he will in the support of measures which will protect the sailors on our ships and ameliorate and improve their condition.

I was responding to the inquiry of the Senator from Missouri, and I stated as a proposition of international law—and I am not fearful as to the correctness of that statement—that nations whose subjects or citizens have ships are to legislate as to all matters concerning the management and control of those ships and have juris-diction as to all things in regard to those ships when in our own ports, except so far as concerns peace and security and safety. A man cannot, for instance, commit a crime upon a foreign ship and escape responsibility to local law nor can he perpetrate a nuisance and escape responsibility to local laws, but as to other matages they have invisited to ters they have jurisdiction.

We have a right to pass a law which is in conflict with international law if we see fit to do so. International law has but one tribunal for its enforcement, and that is the tribunal of arms. Whenever a nation sees proper to enact legislation which is in conflict with international law it has the right to do so, and if it has the power to maintain it it can make it good. There is no question about that.



I said, Mr. President, that there were treaty obliga-tions. I will read one of them. I am not sure but that under the favored-nation clause, even if no similar provision is found in any treaty with any other maritime nation, every other nation has the right to the same benefit. Article 13 of the treaty of 1871 between the United States and Germany, made immediately after the formation of the present German Empire, is in this language. in this language:

"Consuls general, consuls, vice consuls, or consular agents shall have exclusive charge of the internal order of the merchant vessels of their nation, and shall have the exclusive power to take cognizance of and to determine differences of every kind which may arise, either at sea or in port, between the captains, officers, and crews, and specially in reference to wages and the execution of mutual contracts. Neither any court or authority shall, on any pretext, interfere in these differences, except in cases where the differences on board ship are of a nature to disturb the peace and public order in port."

"Neither any court or authority shall, on any pre-text, interfere in these differences except in cases where the differences on board ship are of a nature to disturb the peace and public order in port or on shore, or when persons other than the officers and crew of the

vessel are parties to the disturbance. "Except as aforesaid, the local authorities shall confine themselves to the rendering of efficient aid to the nne themselves to the rendering of emcient aid to the consuls, when they may ask it, in order to arrest and hold all persons, whose names are borne on the ship's articles, and whom they may deem it necessary to detain. Those persons shall be arrested at the sole request of the consuls, addressed in writing to the local authorities and supported by an official extract from the register of the ship or the list of the crew, and shall be held during the whole time of their stay in the shall be held during the whole time of their stay in the port at the disposal of the consuls. Their release shall be granted only at the request of the consuls, made in

writing. What I want to say, Mr. President, is this: That may be an altogether improper stipulation; that may be a stipulation which does injustice to ourselves; that may be a stipulation which does injustice to the crews of foreign vessels. I am not here for the purpose of defending it; that is not what I am on my feet to say; but what I am here to say is that we have agreed to it solemnly and for over 40 years it has been the supreme law of this land; for over 40 years it has been our agreement with the German Empire. I have not had the time to examine the matter to see whether there are similar stipulations in our treaties with other great maritime nations, but if there are not, as I have said before, I am not prepared now to say that under the favored-nation clause all the other nations with whom we have treaties containing such a clause may not have the benefit of the stipulation referred to. I do not wish to undertake to say, without further investi-

gation, that that is so. I repeat, I did not read that for the purpose of sayof showing that it is what it is. That is our agreement. It may be that it ought to be changed; but, if so, Mr. President, comity between nations, proper regard for our treaty obligations, and proper regard for our president, comity between nations, proper regard for our treaty obligations, and proper regard for our president, comity between nations, proper regard for our president of the proper regard for our friendly relations with the Government of the proper regard for our president of the proper regard for our president of the purpose of say
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but, if so, Mr. President, comity between nations,

proper regard for our treaty obligations, and proper regard for our purpose of the purp with which we have made a stipulation of that kind requires that, when we propose to change it, we should ask that nation to agree with us upon the change— not ask it with the idea that if she does not agree we are still to be bound by it if we do not agree with her about it, but ask it in the hope that there may be such modification as we think ought to be made; ask it, if you please, with a purpose to disregard it and to legislate as we see proper if there should be such disagreement.

The point I make, Mr. President, is that it is not consistent with usage, it is not consistent with good policy, when we have a treaty obligation with a foreign nation, one of the great friendly nations with have great commercial intercourse, which we which we have very much in common, with which we wish to maintain and continue friendly relations—I say it is not consistent, Mr. President, with usage or with good policy for us to pass a law which would abrogate

it, which this bill will do, without showing proper deference to the country with which we have heretofore solemnly made that agreement.

Mr. President, when I rose I had no idea of discussing this question this afternoon. I have no doubt there are a great many other things in this very far-reaching bill which require careful consideration. I very much wish this matter had been called to the attention of the Senate in a way to challenge our attention and to impress upon us the importance of careful investigation.

Matters which concern our own internal policy we can proceed with as hastily as we please, though we ought to give careful consideration to everything; but it is a matter of supreme importance, when we pro-pose legislation which is to affect our relations with other countries, that we shall proceed in a way which other countries, that we shall proceed in a way which will satisfy us and satisfy the world that we have given careful consideration to that which we propose to do; that we have weighed the consequences, and that we have observed the amenities which are thought properly to control in international intercourse.

Mr. President, the Senator's whole proposition is simply this: In response to the suggestion that notice ought to be given, he assumes, in the first place, that if

ought to be given, he assumes, in the first place, that if such notice were given the foreign Government—the German Government in the particular case in question here now—would not agree with us, and therefore we should not stop to negotiate with it. I think that is an assumption which is not justified. I think it is an assumption, even if the Senator has great confidence in it, to act upon which would be in utter disregard of

the usual methods of international intercourse.

Mr. President, I do not know that I will have another word to say on this subject, and I do not myself propose to call the roll for the purpose of embarrassing the question of the passage of the bill. I have done my part. For myself I cannot vote for it; and in saying I cannot vote for it I repeat that the Senator from Wisconsin does not go further than I do in the desire Wisconsin does not go further than I do in the desire to safeguard human life at sea and to make all proper and legitimate provision which can be made to that end. The Senator from Wisconsin does not go further than I do in the desire to ameliorate and improve the condition of sailors.

But I cannot shut my eyes, Mr. President, to the fact that this proposed legislation is not in harmony with our general policy in proposing thus arbitrarily and drastically to set aside the provisions of treaties by a legislative enactment without ever having entered into conference with the other nations with which we have made such treaties.

I repeat, Mr. President, I thought it was my duty as a Senator to say this much. I do not suppose this is to be the end of this legislation. It has to be considered elsewhere. With this statement I am perfectly content to leave it.

I repeat, I do not know that I shall say another word: it is not my purpose to avail myself of any op-portunity which may be presented to defeat the bill in any way, but I do think that the views which I have expressed should at least receive the consideration of the Senate.

Mr. BURTON. In the statement that I made a few days ago in regard to the men who first responded and who were chosen on the Grosser Kurfurst at the time of the Volturno disaster, I am inclined to think that I was in some error. Either my information was inaccurate or I misunderstood a conversation. However, a very considerable share of the men who took part in the work of rescue were other than sailors. I have asked that an exact statement be furnished me of the men who manned the boats. This is given by Captain Moeller, the local superintendent of the North German Lloyd Line at Hoboken, after he had made full inquiry. It is to be noted that the Grosser Kurfurst came close to the Volturno, and, I understand, was the first that succeeded in taking passengers off the burning ship. I

now read a telegram received from Captain Moeller:

"Besides sailors, also stewards, scullery men, and coal trimmers volunteered and were picked to man lifeboats of Kurfurst. Captain reports first lifeboat under second officer"

Then he goes on to tell of what the crew was made up:



"One quartermaster, one sailmaker, four sailors, one boilermaker, one coal trimmer."

So there were three who were not sailors in this crew.

"Second lifeboat under third officer, six sailors, three stewards, one trimmer."

Making six sailors and four others of the crew.

"Third lifeboat under fourth officer, two quartermasters, two sailors, two stewards, one scullery man, two trim-

Two quartermasters and two sailors would make four, and there were five others—two stewards, one scullery man, and two trimmers.

The last boat was manned by a majority of nonsailors.

"These three lifeboats went to rescue at night during heavy storm and high sea and saved 32 persons from Volturno before daybreak. Rescue after daybreak comparatively easy, account moderated weather.

"I repeat that not only our sailors but all the men employed in the different departments on board are con-

stantly drilled in handling lifeboats."

I have here also a telegram from the master of the Kroonland, which was engaged in the work of rescue. It states:

"When my ship rescued 88 people from burning Volturno, heavy gale blowing and a terrific sea running. Many volunteers from all departments of my crew offered to go in the boats. All were eligible for the work of handling the lifeboats. I selected crews composed of sailors, firemen, and stewards; in my judgment, the said firemen and stewards being more competent for the work than some of the deck hands, due to our frequent training in boat drills. Launched three boats."

On this same subject I wish to read a letter from a man conversant with conditions on the Great Lakes, from the manager of a great passenger line at Detroit, which for many years has had no accidents whatever. It is from Mr. A. A. Schanz, manager of the Detroit & Buffalo Line. He says:

"With reference to our conversation last Tuesday evening regarding the lake seamen's efficiency in handling lifeboats, I am pleased to say our company gives cash prizes for the most efficient crew on each of our steamers, and before the close of the navigation season we give a grand prize to the most efficient crew of all our fleet. The prize on each boat for the most effi-cient crew is \$50 and the grand prize is \$200, so there is quite a competition between our crews on each steamer in their work in this direction. Last year on the steamer in their work in this direction. Last year on the steamer City of St. Ignace we had a crew of firemen who were made up of Greeks who had never sailed up to that year, but they won the prize on that steamer for the best handling of their boats, oarsmanship, and everything pertaining thereto. When the time came to have the contest for the grand prize this crew of Greeks won the first prize on account of their great efficiency.

"We have 10 boats in our fleet, and in a number of cases the steward's crew were first in efficiency. The able-seamen crew were usually second or third."

Then he goes on to say what is perfectly well understood, that the frequent changes of personnel, the comparatively short service of the seamen, diminishes their efficiency and makes them less suitable for the hand-ling of boats, becase they do not know the arrange-ment of the mechanism, the davits, or the location of the

Competency as a lifeboat hand is not a question of three years' service as a seaman; it is based on physical capacity and drill. That is what makes a good lifeboat hand. If a man is muscular, has courage, and has had the practice which enables him to handle a boat, then he will be a good lifeboat hand whatever title you give him. If he lacks those qualities, he will not be. In the conditions which exist in our merchant marine the stewards, the firemen, and others of that class are much more constantly with the boats, so that the drills, to which all should be subjected and in which they all should take part, can be enforced with them better than with any of the others. The letter from which I was reading proceeds to say:

"I respectfully request that you offer an amendment

to the present seamen's bill making it compulsory that to the present seamen's bill making it compulsory that members of every department on a steamer shall be compelled to drill both in fire and lowering of boats, and that every member of the crew shall be assigned a station in case of accident or fire, and there should be a penalty attached to those who do not comply.

"Have you given any thought to the fact that if the present bill passes as it reads, that 60 per cent. of the day-outing and excursion boats will be put out of business, owing to the fact that they were not constructed to carry this heavy weight of so many lifeboats on the

to carry this heavy weight of so many lifeboats on the upper deck? As you know, most of them are side-wheelers and are operated in shallow water, and they must be light in construction. It is this class of boats that give the working and the middle class a day's outing at a very reasonable fare, and if the bill is passed 60 per cent. of the people now employed on the Great Lakes would lose their positions. I therefore respectfully request that you insist upon the Great Lakes being excepted from the bill."

Mr. President, this bill puts an ocean-going steamer, or one crossing the ocean, on the same footing with a boat that goes no more than 5 miles from land; it

boat that goes no more than 5 miles from land; it puts a boat which never goes in water deeper than 20 or 30 feet, or even less, where the hull would not be submerged, on the same footing with a boat that in its voyage sails over water 20,000 feet in depth.

This has been a very perplexing and difficult problem. Our supervising inspectors in their various meetings each year have taken it up and prepared the most careful regulations covering it. They make certain exemptions in the summer season; they provide for the use of rafts in certain seasons of the year and in some localirafts in certain seasons of the year and in some localities for boats in other seasons; they grade their requirements according to risks, and do not attempt to quirements according to risks, and do not attempt to make universal regulations which shall be applicable in all places. This bill would apply to Lake George and to Lake Champlain, to excursions which simply round the corner in going from New York to Coney Island, to boats which go across from the piers in New York City to Sandy Hook, having an enormous traffic with New Jersey, a line on which, I believe, there has never have a precident, and on which the boats are of the years. been an accident, and on which the boats are of the very best construction. There would be three obstacles which would be fatal to compliance with the provisions of this bill-first, the number of men required-that is, perhaps, not the most important; second, the place for the stowage of the boats on the deck; third, the weight which would be created by placing these boats on the

There has been much discussion between German and English experts in reference to the places for the stowage of lifeboats. On some of the German boats the smaller boats are placed on the second deck from the top. The English experts of the board of trade have rather opposed that plan, first, on the ground that the boats could not be quickly handled; and, second, because in a high sea the water would come up so high that they could not readily be lowered.

Why, Mr. President, what does this substitute attempt? It seeks to wipe out all the regulations of these

many years and to substitute a standard of requirement that has been repeatedly considered and repeatedly re-jected. While it is true there have been casualties which we all deplore, nevertheless the operation of our mer-chant marine has been attended by a degree of safety in travel unsurpassed by rail, by foreign steamers, by sailing vessels, or by any other means of transportation in the world.

"Sec. 12. That no vessel of 100 tons gross and up ward, except those navigating rivers exclusively and except as provided in section 1 of this act, shall be permitted to depart from any port of the United States unless she has on board a crew not less than 75 per cent. of which, in each department thereof, are able to understand any order given by the officers of such vessel, nor unless 40 per cent, in the first year, 45 per cent, in the second year, 50 per cent, in the third year, 55 per cent, in the fourth year, after the passage of this act, and thereafter 65 per cent, of her deck crew, exclusive of licensed officers, are of a rating not less than able seamen." able seamen.

Clearly that provision in regard to the proportion of so-called able seamen in the crew of the boat and relating to the requirements for the management of life-



boats applies to foreign vessels. How are you going to find out whether the men are able seamen or not? Either that clause means something or it means nothing. It is evident from the very drastic penalty proposed on the following page that it is intended to mean something, because it is there said:

"The collector of customs may, upon his own motion, and shall, upon the sworn information of any citizen of the United States setting forth that this section is not being complied with, cause a muster of the crew of any vessel to be made to determine the fact; and no clearance shall be given to any vessel failing to comply with the provisions of this section."

That is, having a requisite number of able seamen-

"Provided, That the collector of customs shall not be required to cause such muster of the crew to be made unless said sworn information has been filed with him for at least six hours before the vessel departs, or is

scheduled to depart."

That is, on his own motion or on the sworn information of any citizen of the United States a boat can be stopped, and, no matter how fast her schedule is, no matter how heavy the penalties are which may be imposed upon her for not starting with the mails at a certain time, up to six hours within the time fixed for her departure the complaint may be made, and the collector of customs shall order a master of the crew to see whether there is the required number of able seamen on board. How are you going to find out? The provision on page 16 is

"No person shall be rated as an able seaman unless he is 19 years of age or upward and has had at least three years' service on deck at sea or on the Great Lakes."

Then it goes on to provide how the status of an able seaman is determined, as follows:

"Any person may make application to any board of local inspectors for a certificate of service as able seaman, and upon proof being made to said board by affidavit, under rule approved by the Secretary of Commerce showing the nationality of the applicant and the vessel or vessels on which he has had service and that he has had at least three years' service on deck at sea or on the Great Lakes, the board of local inspectors shall issue to said applicant a certificate of service, which shall be retained by him and be accepted as prima facie evi-

dence of his rating as an able seaman.

"Each board of local inspectors shall keep a complete record of all certificates of service issued by them and to whom issued and shall keep on file the affidavits upon which said certificates are issued."

That is, a specific way of determining whether a man is an able seaman or not is provided by making this application and the issuance of the certificate. A foreign vessel comes into one of our ports. What must it do under this provision? It must compel its seamen, before they can establish their status as able seamen to comply with this law, to take out certificates in the United States under our inspectors, and allege as the basis that they are at least 19 years of age and that they with this law, to take out certificates in the have had three years' service at sea or on the Great Lakes. Does anyone suppose for a moment that any foreign nation is going to submit to any such regula-tion as that? More than that, is it just that we should demand that no boat shall leave our ports except with a certain number of a specified class, and then prescribe the manner in which that specified class shall be de-termined by the issuance of certificates, requiring them to have our certificates before we will permit them to go

There is another point concerning this which, however, does not assume very great importance. The German and the Norwegian rule is 18 rather than 19 years; indeed, the world over the majority of the most active sailors are young men. It is stated that on Adactive sailors are young men. It is stated that on Admiral Sperry's fleet, which went around the world, the average age of the men was only a little over 21 years. I do not wish to express any opinion as to which is the better age limit, but the fact is that the age limit prescribed here would conflict with that of foreign nations tions.

So that I may not be misunderstood, let me repeat what I have already said, that not a single one of these nations—Germany, Norway, France, England, Russia—

has a general requirement like that in this bill for any special proportion of able seamen.

Among the great maritime nations this bill, if passed, would be the first regulation of the kind. I want to add in this connection that it would be utterly impracticable to obtain the men. What is the condition of our mer-chant marine regarding service at sea? The work is not of a type which affords a pleasing prospect to the average American, whether he be native born or naturalized. After a few years of service, certainly after three years, they seek some better positions. In the same length of time that you provide in this requirement for this comment of the light of the same are the same length of time that you provide in this requirement. ment for able seamen a man can apply for a license as mate of a vessel or to be an engineer. As I stated yesterday, in one year less than is provided in this requirement for an able seaman—that is, in two years if a man is on a river or on inland waters he can apply for a license as a mate.

It would be utterly impossible to tell how many men we have; but I wish to read from a memorandum by Mr. Chamberlain, the Commissioner of Navigation, in a report that he made last year on a similar bill:

"On June 30, 1911, excluding vessels on western rivers, there were 24,143 documented vessels of the United How many of these are employed in navigating States. other rivers exclusively I cannot determine. Probably 20,000 would come within the section as I understand it. I cannot determine the deck crews of these 20,000 vessels, which range from 1 to about 40. The bill, however, will probably require about 40,000 certificated able seamen 90 days after its passage. In April, 1911, the British census showed, excluding masters and mates, 36,027 able seamen or those of higher ratings include. 36,927 able seamen, or those of higher ratings, including quartermasters, boatswains, carpenters, etc."

That is, with their enormous merchant marine, far and away in the lead among all the nations of the earth, the British have only 36,000 able seamen, and that, too, under a system which has been in vogue for a great many years, under which they give certificates to able scamen. We have had no such system. We have had no such classification.

The bill as it passed the Senate last winter provided for a classification of that kind, so that we might make a start, if it were thought desirable, to require that a certain number of able seamen should be on every boat. If the system works well, it might be best, although these other maritime nations have no such requirement, that we should have it. But here you are proposing in this bill a requirement which it is estimated will require 40,000 men of a certain class, and yet you do not

have a single man certified for that purpose.

Does anyone suppose for a minute that you are going to find it possible within 90 days to carry out the provisions of this bill, or within a year, or even two years? Your men, when they serve a year or two, and especially when they serve three years, are going out into some other line or calling. They are not going to stay by the sea. It is true that in England, and especially the sea. cially in Norway, and in Germany as well, there live a class which follows the sea generation after generation—father, son, grandson, all of them. But in this country the son of a sailor, under the beneficent opportunities that are afforded by our public schools, studies for some other position more to his taste. Perhaps he becomes a lawyer; perhaps he becomes a merchant. We have no such class of sailors to draw from and you cannot obtain them.

I make the statement with the utmost confidence that if you pass this bill, or any such measure, you cannot enforce it. You will not be able to get the men. It will not be a question of wages; it will, I say, be a question of men. You will have a law providing that a boat shall of men. You will have a law providing that a boat shain not leave a port, except in a river, or when it plies inside a harbor, unless it has this proportion of able seamen, which you cannot find even if you should look to the four quarters of the earth. The Germans could not find them for their boats. It would be far and away more difficult for us to express this law are a way and it would for us to enforce this law upon our ships, and it would not only be out of comity with other nations, but it would be imposing on them a regulation with which they

could not comply.

That shows the danger of framing bills in accordance with an ideal, or introducing a bill or a substitute for it that is based on the contention of one side only. The



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subcommittee took up this matter last winter, and every member gave it the most elaborate attention. I think I am safe in saying that no one argued more strenu-ously than our colleague who is now absent, the Sena-tor from South Dakota (Mr. Crawford), that this provision could not be enforced.

There is a provision in the Nelson bill to the effect that there must be a sufficient number of men to interpret the orders given on a boat. It makes the same general provision as the proposed substitute, that 75 per cent. must be able to understand the orders of the officers. As I recall, "75 per cent. in every department" is the provision in the bill introduced by the Senator from Wisconsin (Mr. La Follette). I read the language:

"Not less than 75 per cent, of which, in each department thereof, are able to understand any order given by the officers of such vessel."

Just what that means probably would be a matter for the executive department, and perhaps ultimately for the courts to determine. Does it mean that a man in the fire department must understand the language of the captain and his orders? Does it mean that a man in the steward's department must understand the language of the chief engineer?

It is very desirable that all the men on board a boat shall speak the same language, just as it is desirable in our rolling mills that all the men shall understand English perfectly. But such has been the tremendous growth of our industries and the scarcity of men that there are thousands of persons in our furnaces and iron mills handling red-hot ladles who do not understand English. So rapidly has our whole industrial and commercial population increased that we are bringing in mercial population increased that we are bringing in great numbers of those who at best only partially understand our language. I should be glad to see some change effected, so that the men in those mills will not have their lives endangered by a sudden emergency. The committee considered that matter, and I will say with the utmost frankness that they had more doubt about it than some oher provisions in the bill. There

with the utmost frankness that they had more doubt about it than some oher provisions in the bill. There was one consideration that weighed considerably with us. We wanted, if possible, to preserve the American flag on the Pacific Ocean in the trans-Pacific trade. I have always opposed ship subsidy as strenuously as anyone in the Senate; but there are, I believe, only five or six ships left that sail to the mainland of Asia from the western coast of the United States. They are placed in sharp competition with a great Japanese line, which, as stated yesterday by the Senator from Florida (Mr. Fletcher), receives a very large subsidy. They are also competitors with the Canadian Pacific Line, which receives a very considerable mail payment. They do not call it "subsidy." perhaps; they prefer to call it by some other name. Our boats, on the other hand, do not receive a dollar of subsidy. All these other boats have oriental crews, outside of the officers.

There are some pretty good reasons for that. In crossing over to Hongkong, under this bill, you could not have in the fire department a Japanese or a Chinese fireman unless he understood the English language. In a part of that trip the temperature is exceedingly severe—so severe that the Caucasian, certainly the American, will not perform the work. Indeed, he can hardly endure it. These Chinamen—and they are

ceedingly severe—so severe that the Caucasian, certainly the American, will not perform the work. Indeed, he can hardly endure it. These Chinamen—and they are not of the small type that we are accustomed to see engaged in the laundry business and similar occupations in our own country—were put upon the boats as stewards, as furnace men, and as sailors.

Take the case to which I have referred, that of furnace men. Without an exception, every single line employs these orientals because they can better endure the heat. Our American transports tried for a while to have native Americans or Caucasians in the fire department, but they continually had trouble and were forced to give it uo, and to-day they are using Filipinos for the purpose. for the purpose.

In view of all these things—the disadvantage at which In view of all these things—the disadvantage at which our boats are placed in competition with others and the kind of work to be done—the committee thought the adoption of this provision as it stands in the substitute would drive our flag out of the trans-Pacific trade. I for one do not like to take that responsibility.

What would be the result of the adoption of this provision? The six boats engaged in the business on the

Pacific no doubt would be forced to withdraw. The traffic, both freight and passenger, between the ports of the Pacific coast and the Orient would be turned over very largely to the Japanese. I can see one town that would benefit very much by it, and that is the town of Vancouver, in British Columbia, where they have no such regulation, where they will still allow boats having Chinese firemen and Chinese crews to come in, and to which the boats which otherwise would come to Seattle and Tacoma and Portland would go instead.

Mr. President, it is not a matter of a language test on boats. The skilled sailor can understand what is desired by a few words. When the Titanic was in extrems there was such a rush of steam that, at least at one time, in manning the lifeboats none of the crew could hear the words of the officers, but they were directed with just as much certainty as if he had spoken to them

with just as much certainty as it he had spoken to them in a language that they understood. I do not know what sort of tests would be adopted.

Right in this connection I may say that it would require a very large force to carry out this bill. Our collectors of customs are asked to ascertain whether this 75 per cent. of the crew understand the orders of the captain. captain. I have the highest opinion of our collectors of customs, but I do not believe a third of them could understand, if all spoke English, the orders which the captains and masters gave to their crews, and much less if the officers spoke another language. What are you going to do? Put in a great force of interpreters, and thereby determine whether the crew understand the language of the officers? It would be vesting a great degree of discretion in persons who are not qualified, however excellent their abilities may be, in a matter of this kind.

I repeat that I do think it most desirable that so far a possible the language of all should be the common farm.

as possible the language of all should be the same; but it view of the conditions of trade on the Pacific and on some portions of the Atlantic I do not believe it will be practicable or will afford encouragement to our shipping to enforce this rule in the form in which it appears in the substitute bill.

Mr. President and Senators, I want to call attention to one thing in this bill which shows the way in which it is drawn, as I think, with regard for only one side. On page 9 of the substitute, as now pending on the mo-tion of the Senator from Wisconsin, and in subdivision 6 is the following in the list of punishable offenses by

seamen:

"or assaulting any master or mate by imprisonment-" And so forth.

All agreed that discipline should be enforced on board the boat, but it was suggested that it was just as serious an offense to assault an engineer or a chief steward as it was to assault a mate. Indeed, in the fireroom, farther removed from the open space on deck, there would be stronger probability of a seaman or sailor assaulting an officer. So it was proposed by the committee that those words be changed to assaulting "any master or licensed officer," thinking that without that this bill could not be made complete. I see the word "mate" is retained here in the cubetitute in the substitute.

Now, when there is a provision which looks the other way, let us see what is done. On page 11, section 4611 of the Revised Statutes, is to be re-enacted in this form:

of the Revised Statutes, is to be re-enacted in this form:

"Flogging and all other forms of corporal punishment are hereby prohibited on board of any vessel, and no form of corporal punishment on board of any vessel shall be deemed justifiable, and any master or other officer thereof who shall violate the aforesaid provisions of this section, or either thereof, shall be deemed guilty of a misdemeanor, punishable by imprisonment for not less than three months nor more than two years." less than three months nor more than two years."

In the one case it is the master or the mate. They are the only persons for whom, if attacked, punishment can be inflicted. In the other case, where the offense is against the subordinate on the boat, then it is the master or other officer, which will include not only the master but the other licensed officers and the petty officers on board. Mr. President, it does not seem to me that is quite fair, that it is keeping the scales quite equal.

Another thing. After long discussion, the Senate committee thought it just to insert a provision to the effect that punishment should be provided for attempting to prevent anyone from seeking employment or to prevent anyone from remaining with the boat by threat or force.



I will read the whole section. It is on page 15 of Senate Bill 136:

"If any person shall demand or receive, either directly or indirectly, from any seaman or other person seeking employment as seaman, or from any person on his behalf, any remuneration whatever for providing him with employment-

That is a part of the old law really. The object of that is to prevent the sailor from losing his wages, or a part of them, in obtaining a job on board any boat-"or shall by any threat or force dissuade or prevent or endeavor to dissuade or prevent any person from tak-ing employment on board any vessel, or shall by any threat or force dissuade or prevent or endeavor to dissuade or prevent any person from remaining in the service of any vessel on which he has shipped, or by any threat or force induce or compel any person to dis-regard or disobey any lawful order or orders of the master or other licensed officer of the vessel on which has shipped he shall for every such offense be deemed guilty of a misdemeanor and shall be imprisoned not more than six months or fined not more than \$500."

In order to maintain discipline, in order to secure the departure of boats on time and without undue delay, it was thought desirable to impose a penalty not against

mere persuasion but against threat or force.

Mr. President, let me read the law with reference to those who seek to get men on the boat, and it has been the law for some years. It is found on page 61 of the navigation laws of the United States, edition of 1911, punishing those who induce any one to go on board:

"Whoever, with intent that any person shall perform service or labor of any kind on board of any vessel engaged in trade and commerce among the several States or with foreign nations, or on board of any vessel of the United States engaged in navigating the high seas or any navigable water of the United States, shall procure or induce, or attempt to procure or induce, another, by force or threats, or by representations which he knows or believes to be untrue, or while the person so procured or induced is intoxicated or under the influence of any drug, to go on board of any such vessel, or to sign or in any wise enter into any agreement to go on board of any such vessel to perform service or labor on board of any such vessel to perform service of labor thereon; or whoever shall knowingly detain on board of any such vessel any person so procured or induced to go on board thereof, or to enter into any agreement to go on board thereof, by any means herein defined—"

Indeed, the section not only applies to the man who uses the threat or the force to get a man on board, but also to the man who is on board and who might not know of the circumstances under which the other

was induced to come-

"or whoever shall knowingly aid or abet in the doing of any of the things herein made unlawful, shall be fined not more than \$1,000, or imprisoned not more than one year, or both."

Why should you have a penalty in one case and not in another? Our laws should be fair to all. If force or threat or causing a man to be intoxicated or inducing him by misrepresentation to go on board a boat is an offense, then there should be an equal penalty for the use of force or threats brought to bear to get him off the boat or to induce him to disobey orders on hoard

snip.

In all these matters our sympathy naturally would be with the seamen, but it is a question as to what is fair and equitable in a system of law covering this subject, that it may be just and uniform in its relation to all classes. I insist we are not justified in making this an offense in one case and refusing to make it an offense

in another.

Mr. WILLIAMS. The Senator from Ohio criticizes the substitute in that it does not make a distinction sufficient between a long-distance trip and a short-distance trip, and between lake service and sea service and river service and other service. I would like to say that it seems to me he pressed that point of it too much.

If the Senator will remember the case of the "General Slocum," which, I think, went down between New York City and Coney Island, and was in reach of the land all the time, and in sight of it all the time, he will remember that those people huddled together upon that boat, upon a pleasure excursion trip, as I remember it-though

my memory is not perfectly accurate about the way the accident occurred, it having occurred seven or eight years ago—and they died like rats in a burning barn, vith bulldogs around keeping them in the barn, and they died because there were not enough-

Mr. BURTON. Life preservers.

Mr. WILLIAMS. Life preservers and enough lifeboats and enough boats of other sort to take them off the ship. If the Senator had ever been upon a Mississippi River boat in the middle of the stream when the boat caught afire, and caught afire in the engine room, where it usually catches afire, he would conclude that being in sight of land did not have much to do with this problem.

Mr. BURTON. Mr. President, first I wish the attention of the Senator from Mississippi to this: Is he aware that the "Slocum" was sunk in a place near Blackwells Island, and that a boat in that locality would have been exempt from the regulations of this bill?

Mr. WILLIAMS. No; I say frankly I was not aware of that.

Mr. BURTON. This bill would not cover a case like that of the "Slocum."

Mr. WILLIAMS. I was not aware of that.

Mr. BURTON. Is the Senator also aware that the Mississippi River is exempt from the provisions of this hill?

Mr. WILLIAMS. That merely proves that the Sena-or's criticisms are more wrong than I thought. The bill, instead of going too far in the way of protecting those who are traveling upon the Hudson and the Lakes and the Mississippi, does not go far enough.

Mr. BURTON. Mr. President, that may sound very well; but every one who has had experience in navigation knows that it is utterly fallacious. What was the cause of the great loss of life on the "Slocum"? Probably they could not have saved a hundred of them by the use of boats. It was near to land. Those who were on board would not have sought boats to save their They would have sought a life preserver or some such device. If there had been an attempt to lower a boat with that crowd, it would have ended in a panic and the swamping of every boat. You can not talk with an inspector who has had experience in these matters and has studied them but who will tell you that. Every one knows that the loss of the "Slocum" was due to miserably improper life preservers, a fraud amounting to a crime, and, further, that their life preservers were not of a proper type.

I take it from the remarks of the Senator from Mississippi that he would put on every one of the boats on the Mississippi River a number of lifeboats. Does the Senator know that you could not carry the number of boats required here without danger of capsizing and sinking a Mississippi River boat? If you put them in the only place available, they would tip the boat over. Does the Senator know that if this requirement in regard to lifeboats as it applies to ocean steamers were carried out on the Mississippi it would make such a boat so topheavy that it would be in danger, I may almost

so topicary that it would be in dangers, say, of foundering?

We might perhaps build a boat on a different model, but it would be less speedy and more difficult to manage, and would by no means answer the purposes of modern navigation.

The problem in regard to these excursion boats is not a new one. It is merely obscuring the issue to bring up such a case as that of the "Slocum," and is especially obscuring it when this substitute, as offered here, would not have covered such a case. Every life that was lost in that disaster would have been lost if this bill had then been a law, because the accident was not only in a river but it was in a horlor. a river but it was in a harbor.

Mr. WILLIAMS. But, if the Senator will pardon me a moment for one more suggestion, the "Slocum" disaster would not have occurred even under the law as it then existed if the law had been obeyed.

Mr. BURTON. That is the whole fact of it. The disaster was due to the lax enforcement of the law.

Mr. WILLIAMS. Yes.

Mr. BURTON. And, indeed, from what the Senator from Mississippi has said it seems to me he does not differ greatly from what I have argued, in that he lays



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stress on the importance of providing for the individual by life belts or life preservers, rather than by lifeboats.

But why is it that you are putting these short runs near to shore in shallow water on the same footing with an ocean voyage and exempting boats on rivers and harbors from the regulations provided by your bill? It is altogether unfair.

I shall offer another amendment in this connection. The PRESIDING OFFICER. Has the Senator from Ohio offered an amendment?

Mr. BURTON. I say I shall offer an amendment. am merely reading it now, but I shall offer it later. I propose, on page 16, line 2, of the so-called La Follette substitute, after the word "rivers," to insert the words "lakes, bays," so that the clause will read:

"Except those navigating rivers, lakes, bays, and harbors exclusively."

The bill is not fair or equitable unless you do that. This amendment aims to place one class of navigation on a certain footing, while another class, the over-sea

and long-distance class, is placed upon another footing. Now, just a word further. One inference might be formed from the remarks of the Senator from Mississippi [Mr. Williams] which would be altogether incor-

rect. It is this, that we have failed to pass laws in regard to life preservers and in regard to safety at sea. rect. Why, Mr. President, we have passed laws on that subject as strict as those on any statute book in the world. I think I may say further that their enforcement by our inspectors and their assistants has been as good as in any nation in the world. Indeed, I do not know but what better. We are at the very fore in that regard. Two things are alike to be avoided: First, that which touches us most nearly, avoiding disaster and loss of human life, and, over on the other extreme, to avoid making your regulations so strict that boat traffic is not only hampered, but even destroyed. When we learn of an accident on a railroad we do not forbid trains running, we do not stop people from traveling on railroads, but we adopt the most perfect safeguards which can be the operation and management of railroads. But this substitute aims at a class of business where, in these localities, for years there has not been a loss of life. It imposes such restrictions that it will be impossible to comply with them.

As is only too well known, the amendments suggested by Senator Burton and Senator Bacon were rejected.

SHIPPING AT VANCOUVER. B. C.

The Blue Funnel steamship "Ixion" arrived at Vancouver on October 28 with about 2000 tons cargo, 1000 tons of which was from the U. K. and the remainder from the Orient. After completely loading up with 104,-000 cases canned salmon for Liverpool, &c., she sailed again on Friday, November 7.

The next Blue Funnel liner due in is the "Titan," looked for towards the end of November.

The steamer "Oceano," with over 6000 tons of Australian coal for Evans, Coleman & Evans, left Newcastle, N. S. W., on October 30th, and is expected to arrive at Vancouver about December 5-7.

The Hamburg American liner "C. Ferd Laeisz" arrived at Vancouver on November 5 with a very small amount of cargo and left on November 6 for Sound ports. The vessel will return about November 20 to complete loading for the Orient and Europe. Included in her general cargo outwards will be about 1500 tons dog salmon for the Orient.

The steamship "Harlesden" will bring the cargo for B. C., ex the steamship "Colusa" from Salina Cruz. The "Harlesden" is due in on Sunday, November 16.

The Maple Leaf liner "Buenaventura" passed San Francisco on Wednesday, November 12, and after obtaining pratique at Williamshead will omit the usual call at Victoria and come straight on to Vancouver, where she is due to arrive on Sunday, November 16. For the latter port she has about 900 tons of structural steel. She has 2000 tons steel rails for Newport, Howe Sound, and about 2500 tons rails and structural steel for the Grand Trunk Pacific construction work at Prince Rupert. According to a wireless message just received from Capt. Fitzsimmons, it is expected that the vessel will reach Williamshead at 5 p. m. on Saturday, November 15.

The Evans, Coleman & Evans Co. have arranged for the steamship "Atagosan Maru" to load at their wharf at Vancouver, the first week in December, 1500 tons of salmon and herring.

The herring are running well at the present time, and the prospects are very good. There is not much difficulty in getting steamer space this season for this commodity for the Orient, but the fishing camps are experiencing trouble in obtaining an adequate supply of boxes for packing.

Owing to the mild weather, the consumption of coal for domestic purposes in Sound cities has been considerably less than last year at this time, so that at present large stocks are in the yards of all the coal dealers.

The mines of the Western Fuel Company at Nanaimo. the Pacific Coast collieries and South Wellington are shipping coal in small quantities. The Vancouver-Nanaimo Coal Mining Co. at Nanaimo have an output of approximately 600 tons per day, while the Canadian Collieries at Comox now have an output of over 50,000 tons per month, or larger than any previous time since this firm has been operating these collieries.

Considerable coal was imported from the State of Washington during the past month, but very little is being brought in at this time, as the demand is much less than formerly, for the reason above stated.

PACIFIC MARINE REVIEW TO BE REPRE-SENTED IN CENTRAL AND SOUTH AMERICA.

We take pleasure in announcing the appointment of Agencias de Berna as the representative of the Pacific Marine Review in the countries of South and Central America.

We fully realize the importance of being ably represented in this territory for with the opening of the Panama Canal, ports of great importance will be developed in these great countries to the south of us. As interest in Central and South America develops among our subscribers and advertisers, a section printed in Spanish will be added to the Pacific Marine Review.

We are glad to have been able to secure the representation of Agencias de Berna for they cover the South and Central American countries very thoroughly.

GOOD NEWS FROM LOS ANGELES.

We are very glad to learn from the Secretary of the Board of Harbor Commissioners of Los Angeles that the speed rule for the inner harbor of Los Angeles has been amended, and a speed not exceeding 71/2 knots an hour will in the future be allowed for vessels drawing twenty feet or less. Vessels drawing more than twenty feet may go at a speed not exceeding six knots an hour. This rule will go in operation when approved by ordinance and published.



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PREFERENTIAL DUTY CLAUSE OF TARIFF BILL NOT TO BE ENFORCED.

That part of the Tariff Law which was hailed far and wide as being such a benefit to American shipowners in that it granted a discount of 5% on all goods shipped to this country in American bottoms is not to be enforced. Due to the fact that it interferes with our treaties with the principal nations of the world, the Attorney-General has made known the fact that Congress may just as well grant a 5% reduction of duty on all goods entering the United States as to make this clause effective.

With a revision of our navigation laws, which the shipowners and shipbuilders throughout the country have been urging for some time past, this 5% reduction in duty would no doubt have created a demand for American vessels throughout the world. However, it would be impossible under any circumstances to operate American vessels in the foreign trade with the laws that are now in force and those which are being considered by Congress.

Had this clause of the Tariff Bill gone into effect, it is very doubtful, with the present disposition of Congress to ruin what remains of our shipping, whether any steamship companies throughout the United States would have deemed it of sufficient encouragement to warrant the building of new ships for our foreign trade.

Strange though it may seem, this clause cannot become effective on account of our treaties with other nations, but at the same time the Seaman's Bill, which would necessitate the revision of any number of treaties, passed the United States Senate by a large majority.

It just shows who is being considered the most valuable adjunct to our nation. Legislation in favor of our sailors and against our ships is indeed a poor policy. What good are able bodied seamen if we have no ships in the foreign trade, and again, will the Seamens' Union be able to furnish all the additional men the passage of S. 136 will call into service in our coastwise trade? If it is able to furnish these men, what assurance has the shipowner that these men will be the "perfect specimens" Congress seems to think are so plentiful among the sailors?

WHERE IGNORANCE IS BLISS-BUT NOT TO THE SHIPOWNER.

Is it not reasonable to suppose that he who invests capital in any branch of business whatsoever is willing and anxious to make every possible effort to continue that business along lines which are conducive to its growth and improvement?

Does it seems reasonable to suppose that the only exception to this is the shipowner?

Why is it that the United States Senate continues to picture the American shipowner as being so utterly unable to provide for the protection of his passengers, crew, cargo and vessel? Is this same shipowner one to spend several hundred thousand or many million dollars on a fleet of ships, make every endeavor to inaugurate a service by soliciting freight and passengers and then when he has accomplished this, not be concerned in the safety of the human lives he carries, or have no interest in the freight or the vessel itself?

"Where your treasure is, there will your heart be also." Still the men comprising our United States Senate, who one day are deciding our tariff laws, another day our currency laws, and another day as to whether a pension be granted such and such a worthy, turn their attention to our ships just long enough every now and then to add another straw to the poor camel's back and with a final result, if the Seamen's Bill (S. 136) passes, of driving all American vessels in the foreign trade to seek refuge under foreign flags.

What other countries in the world would take it upon themselves to make laws that without accomplishing any good whatever absolutely destroy such a vital adjunct as their Merchant Marine?

Other countries subsidize their shipowners, loan them money at low rates and for long terms, make sane laws and in fact do everything possible to encourage the increase of their ships, realizing what a valuable and absolutely necessary part these same ships play commercially in the histories of all countries save one, the United States of America.

Still our United States Senate does not hesitate to strike the last blow at our Merchant Marine. These men who have never had any practical experience in ships or concerning shipping, who accept the word of a foreign born agitator as the gospel truth and who under the spell of an excited and impetuous orator, and we mean Senator Robert M. La Follette, pass a bill framed by the leaders of the Sailors' Union of the World. These same leaders could not induce any lawmakers of the world to pass such laws with the exception of those of the United States, who are always so anxious to pass the most drastic laws possible to the detriment of their shipping. Yes, the Senate passed S. B. 136, which will harm the shipping of no other nation of the world with the exception of their own and which bill is also against the protection of life at sea, which they thought they were so faithfully and vigilantly safeguarding.

We are surprised beyond measure that an intelligent body of men, such as those comprising the United States Senate, could not see through the veil enshrouding some of the drastic clauses of S. B. 136.

As previously stated, the passage of this bill harms no nation of the world with the exception of one-the United States of America. In fact, the ever increasing burdens placed on our own shipping mean the foreign owners' gain, but this cannot be realized by Congress. Senate Bill 136 benefits Japanese ships more than any

others inasmuch as it gives them the complete and unrivaled control of the commerce of the Pacific Ocean.

Is it to be supposed that Great Britain and Germany, both shipowning nations, are going to permit such a condition as would be caused by the desertion of their sailors at our ports? They have laws in their countries and probably a new law could be made providing that sailors cannot desert at United States ports, under such and such a penalty should they even return to their own country.

At any rate, they are experiencing no uneasiness as to whether or not S. 136 becomes a law and they have good reasons for being unconcerned.

They only pity the American shipowner and his help-lessness.

THE SAILOR A SLAVE. It took Andrew Furuseth many years of constant vigilance to make Congress believe this, but it seems that having once accepted this "truth," they are fain to believe otherwise. True, some sailors work under contract for a week, two weeks, a month or two months, but seldom longer.

Is there any particular slavery connected with this? Doesn't the same thing prevail in many of our construction contracts and aren't the laborers glad to get the work for a specified time?

YES! FREE THE SAILOR, BUT BEFORE YOU FREE HIM, FIND OUT WHETHER HE IS BOUND.

If it did not seem likely that the House of Representatives would follow our Senators in their action with reference to this bill, the whole affair would seem almost too ridiculous to warrant comment. It appears so absolutely impractical and after all the shipping business is like any other, it cannot be operated along such extreme lines. One must use judgment and common sense.

Of course, there are accidents—these will continue as long as we have ships, just as we will have railroad accidents as long as we operate trains and people will fall off buildings as long as it is our custom to construct buildings and lives will be lost by fire as long as we dwell on this earth, etc., etc.

All laborers will have their woes just as long as there is work to be done and as long as some one lends a sympathetic ear to these same woes. The United States Senate undertook too much—they wanted to make the sailors' life unto a haven of rest on shipboard, still what of the officers and shipmasters? Why not carry three masters and have watches in his department, too? What about the officers? Do they not contribute to the safe navigation of a vessel or does the poor maligned sailor have the whole responsibility on his shoulders?

Of course, the sailor has to work, so do the officers, so does the master and last but not least the shipowner himself, who is at his desk from early morning to late at night.

No, Mr. Congressman, you are wrong. Listen to the woes of any organized or unorganized class of workers and you encourage dissatisfaction by thus listening to imagined wrongs. Is there any class of workers in this world to-day who are satisfied—take yourself for an example—couldn't you suggest a few improvements in the way the United States Senate itself is managed? At the same time, would you allow a Senator to desert whenever he chooses at half the salary due him? Are you not also a slave?

Don't make it necessary for the few remaining American shipowners to beg to be allowed to fly the Stars and Stripes of America on their ships. They at this time are honoring their flag when they fly it from their

ships inasmuch as they could save many thousands a year by substituting the flag of another nation for that of the United States.

Give the American Merchant Marine a chance. Listen to what the other nations of the earth who carry 98% of the world's commerce have to say at the International Conference of Safety at Sea. Listen to their superior knowledge in this respect—listen and profit. Then wipe the slate clean and make some constructive laws whereby all will be benefited, the sailor not overlooked, and a start made in rehabilitating our American Merchant Marine.

There is no doubt in our minds but that the sailor's, lot in life has been altogether misjudged by the members of the United States Senate. In all the new ships building, two and three times the space prescribed by law has been alloted to sailors and no objection is made to any law tending to their increased comfort. However, when it is proposed to cripple the entire shipowning and shipbuilding industry, it is time to protest.

The following statements made by Mr. W. M. Brittain, of the Coastwise Lines Association, are quite true. No theatrical outbursts by the friend of the Seamen's Union in the United States Senate can alter the truth of these words for should these facts be investigated, our law-makers would have no need for making such drastic laws as contained in S. B. 136:

"One of the strongest objections to the proposed legislation in the seamen's bill recently passed by the U. S. Senate, is raised to the provision which enacts that sixty-five per cent. of the deck crews of steamers should be able seamen whose qualification shall be three years' previous service on deck at sea, or four years and a halfs' service on deck on the Great Lakes. Not only is such a time qualification unnecessary for the larger proportion of the deck hands of a steamer of the modern type, but it would be likely to exclude from the mercantile marine the very class of young men whom it is desirable to attract.

Operation of Modern Steamers.

"The term 'able seaman' belongs to the days of the sailing ship, before the advent of the steamer. To-day the sailing ship is fast disappearing as a serious factor in the transportation service of the world, and, with the opening of the Panama Canal, is likely to become less so, if we may consider the effects of the opening of the Suez Canal as a criterion. The work performed by the deckhands aboard a modern steamer, with her short masts, little rigging and almost no sails, is of the most ordinary kind of unskilled labor that can be imagined, consisting for the most part of washing decks, scrubbing paint, and polishing brasswork, the center of gravity, so to speak, having shifted from the deck to the engine department, where the really complicated and technical part of a steamer's work is performed. Even on the deck, most of the heavy work is to-day operated by machinery controlled by the engine room forces. To insist that it requires three years' experience to acquire facility to perform such simple duties is absurd, the general opinion of practical steamship officers being that three months at most would be sufficient.

No Requisite for Engineers.

"It is self-evident that the preparation necessary to become a qualified member of the engine room force of a modern steamer should be immeasurably longer than that required for the simple duties of the deckhands. Yet the law to-day requires but three years preliminary service in the engine room to qualify as a



licensed engineer and the same period for a deck officer. Not only so, but a preliminary service of about six months or a year is generally considered sufficient to equip a young man of ordinary intelligence to completely perform the duties of a junior engineer, and certainly not longer to qualify as a fireman.

Chesapeake and Maine Boys.

"The men who are best fitted to fulfill exceptional duties in the deck department of a modern steamer, such as those of quartermaster, boatswain, steersman, etc., are those brought up around the rivers and harbors abounding on our enormous extent of seaboard and in such bays as the Chesapeake and its tributaries, where they are accustomed to handle small boats of all kinds from boyhood, yet by the terms of S. B. 136 such young men are prohibited from qualifying as able sea-The experience acquired by a young man raised on the rivers, creeks and bays of such a State as Maine, and even in the fisheries, would not avail him if he desired to devote himself to the seafaring calling. Furthermore, no young man with any self-respect would desire to enter an occupation which required him to submit to a three years' apprenticeship to qualify for duties which can be acquired in as many months, and such legislation will have the effect of repelling the very kind of young men we should gladly see attracted to the profession.

Practical Test.

"The coastwise and Great Lakes steamship owners of the United States, who comprise 95 per cent. of the steam tonnage of this country, agree that two skilled lifeboatmen for each lifeboat on each ship is entirely necessary, but insist that they be required to demonstrate in the presence and to the satisfaction of a Government official, by a practical test, that they are competent to swing out, lower, detach from boat falls, hoist or assist in hoisting, handle or assist in handling a lifeboat, and to efficiently use one of such boat's oars. This would be more conducive to the safety of life aboard a passenger ship than the arbitrary method proposed by these bills."

We cannot begin to understand why the mere mention of the word "ship," or should we say "shipowner," generally causes our usually calm and intellectual Senators and Representatives to become extremists and almost monomaniacs.

We think it very probable that a good many of the members of both the Senate and House have never taken an ocean voyage of any great length. If so, they would not entertain these visionary ideas concerning the American sailor. We are prone to think that they see the sailor, a poor, ill-treated individual, badly fed and badly housed, his labor, however, being responsible for the safe navigation of the vessel.

There is no doubt that many of these lawmakers are confusing the sailor who years ago went to sea on our sailing ships with the men who are to-day employed on steamers having modern appliances for safe navigation. We respect those who go to sea to assist in the navigation of ships, and, like the shipowner, believe that every arrangement should be made to make their quarters comfortable and their food appetizing. However, extreme measures should not be adopted in connection with the sailor any more than they should be adopted in connection with any other laborer.

Senator Robert M. La Follette, who no doubt has his reasons for wishing to stand in with the labor unions

throughout the country, is to be congratulated on his cleverness. He is far too clever a man to remain a mere Senator-and after all there is nothing like having lofty ideals.

At times, it is rather hard to have to sit back with your hands tied when you are aware that men who cannot be convinced that they do not know all about a ship and its appurtenances are legislating to ruin your business, which is a business that is absolutely necessary to the welfare of the very country that these same Senators represent. Sometimes you so wish you could sit down a while and have a calm talk with some of these legislators and explain that although you are a shipowner, horns do not protrude from your head and you haven't a tail to your credit. The sailor, on the other hand, will soon be looking for those famed wings to sprout.

What we should like to do very much is to change the viewpoints of these lawmakers for just a few days, that is, make them forget what the word "biased" means.

Is there any sane reason why they should enact legislation to so lovingly protect the Sailors' Unions of the world? In these United States, only 5% of the members of the Sailors' Union are American born-still we must disrupt our treaties with foreign nations and plunge our shipping industry into deep mourning, for the bill if passed by the House, means death to our shipping, and These wrongs the sailors are suffering are all what for? fancied.

We wonder if our lawmakers have stopped to consider how easy it is for them to make laws? Considering the rapidity with which they turn out these vicious bills, we're inclined to think that they do not realize the gravity of the situation.

It is almost unbelievable that in this the twentieth century, one man, who isn't an American to begin with. can exercise sufficient sway over the exalted body known as the United States Senate to secure the passage of this cruel bill.

Like any other employer, the shipowner wants his employees satisfied and with this aim in view every provision is continually being made for the sailors' comfort aboard ships. A shipowner is somewhat able to judge as to how many men he needs to man his vessel at a SHOULD BE conferred with when laws are being made that affect him so vitally.

INCREASE IN NORWEGIAN MERCHANT MARINE.

Statistics of the Norwegian merchant marine shows that at the beginning of 1913 there was a total of 3,304 registered vessels with a gross tonnage of 2,487,858 tons. The fleet was valued at \$92,942,400, an increase during the year of \$6,986,000. The fleet was made up as follows:

Number Steamships 2,04 Sailing vessels 1,100 Motor vessels 15	3 1,794,979 6 685,357	Net registered tonnage. 1,084,112 632,989 4,399
Total	2.487.858	1,721,500

These figures do not include small motor boats for fishing, etc., which are not registered. They are estimated to be about 1,400 in number.

Compare the merchant marine of Norway with that of the United States. If the Seamen's Bill passes we will have no merchant marine in the foreign trade whatever. Yet, Senator Robert M. La Follette is doing humanity a great service.



THE SAILOR ABOVE ALL!

After all, it is a truly wonderful accomplishment to be practical—nothing more, nothing less, just practical.

It is, however, hard to possess this accomplishment when endeavors are made to acquaint one's self with a vitally important subject just from hearsay, as witness the following statement made by Mr. La Follette when the Senate Bill 136 was recently being debated upon in the United States Senate:

"Mr. President, of course I am a landlubber and have to take my tutelage from those men who have been at sea. I never shall be able to express my very great obligation to Andrew Furuseth, who for the last four years has called upon me almost every Sunday morning to talk with me about this legislation. Andrew Furuseth is a sailor. He is a Norwegian Americanized, one of the most intelligent men it has ever been my good fortune to meet. For nineteen years he has been sitting up there in that corner of the gallery waiting to be made free. Whatever I happen to know about this subject I have acquired from talking with him. I am confident that the minimum crew of forty would in practically every case, etc."

One is generally willing to concede that there are two sides to every question, but in the above instance only the side of the sailor seems to have been given any credence whatever. We only wish that one of the shipowners of the United States had been able to get as close to one of our United States Senators as did the Honorable Andrew Furuseth, but then our shipowners do not sway a vote as big as that of the labor unions, and there must always be some power behind the throne. In the case of the passage of S. B. 136 by the United States Senate, we do not hesitate to state that this same power was instrumental in passing the most vicious and harmful bill that has ever been even considered by any lawmaking body in the world. The United States Senate have listened to and heard the sailor-we hope the House of Representatives will give some scant consideration to the shipowner, not from any sense of justice, but merely because they have still a little pride smoldering in their bosoms and dislike to think that they were instrumental in casting the final vote that made the American flag an impossibility on ships in the foreign trade.

It seems incredible that such a bill will become law, but then judging from past performances, we can not tell what our legislators will do when it comes to making laws with reference to shipping. They have a way all their own but it is a method which is most discouraging to the American shipowner.

The opening of the Panama Canal is but a little ways off. All the countries of the world will send their ships through this waterway, built by the American people. Of course American ships will pass through this waterway too, but what kind of American ships? True we have our battleships and the steamers in our coastwise trade, but there we stop. The few ships remaining in our foreign trade are barred from the canal entirely, but then the Japanese are allowed the use of this waterway so probably Congress figures it has done well.

Well there are some who do not agree with Congress, and the Pacific Marine Review, representing the shipowners of the Pacific Coast, places itself on record as being bitterly opposed to the continued enactment of such legislation which tends to make the operation of ships under the American flag an absolute impossibility.

You members of Congress would protect life at sea. Your speeches in the halls of Congress are inspiring to say the least. At the same time, did you ever stop to consider that more passengers are lost each year by the

railroads of the United States when traveling on bridges over rivers and other waters than are lost during a corresponding period by the steamers of the United States? Why don't you enact a law compelling railroad companies to carry life preservers? As long as you have gone in for this thing, why not carry it to its rightful conclusion?

Yes, life must be protected at sea and in order to insure protection we will allow the sailor to desert, to feel that he is superior to the officers of the ship and, in fact, to assume that the laws of the United States have been made with the one idea of making his life at sea absolutely pleasing to him.

We do not contend that our American youth is taking as kindly to the sea as he did in the days of the trim clipper ship, but there are many reasons why he finds more attractive occupations elsewhere. In the clipper ship days, we did not have a sailors' union, which in these days and times dictates to everyone from, as the United States Senate would have it, "the shipowner on up to the sailor himself."

The United States Senate is undertaking a great deal in its attempt to equalize the cost of wages on foreign and domestic ships. Their arguments sound all right in the halls of our Senate but they do not look good in print and they are far from being practical, and they are certainly not unbiased.

Good does not emanate from evil. A merchant marine can not be built when laws aimed at its destruction are constantly being made by our Congressmen. Neither can life at sea be further protected when discipline on board ship is discouraged. Speaking of loss of life at sea, which this bill is supposed to prevent, we quote the following figures published in a recent issue of the "Marine Journal" of New York:

The Government reports for 1912 show 307.692,494 passengers carried on American steamboats. From all causes 264 were lost. Of these 183 committed suicide and 81 were lost from causes beyond the power of the Government to prevent. Barring self-destruction, only one passenger out of every 3,798,672 who travel on American passenger steamers was lost. This record is unmatched for safety by any other method of travel.

In spite of this Congress would give the sailor the power to cripple the world's shipping expecting that this power will not be utilized. How can this result in any good to the nation at large?

Consider our position with reference to the other nations of the world. We have scarcely any ships and what we have Congress would legislate off the ocean. It is shown that the other nations of the world carry 98 per cent. of the commerce of the world. When OUR Panama Canal is opened THEIR ships will use it. Nevertheless, the United States of America, which has blundered so with its own shipping, practically driving the American flag off the Seven Seas, would advance the standard of the foreign seaman, would make it necessary for foreigners to pay their crews higher wages with the idea of "freeing" the sailor, making the sailors' life more attractive to the Caucasian race, whether Swede. Dane, Norwegian, English or German.

But why discriminate against our ships so particularly? It happens that the ships of the earth are not the only means of affording foreigners, including Asiatics, a livelihood. Our lands are being farmed by this same class, the majority of the manual labor in this country is accomplished by them and they are to be seen on all sides.

It just happens that our citizens are no longer at-



tracted to such occupations that provide small compensations and considering the fact that seamen on American vessels now receive more wages and do less work than any others in the world, can Congress be fair and ask more of the American shipowners?

Our shipowners are very human. Last year when a bill similar to Senate Bill 136 was being considered by the United States Senate, the shipowners made no hesitancy in favoring the clauses of the bill providing for better quarters for the crew or any other improvements that would make life on the ocean wave more attractive. They are not worried about the clauses of the bill with reference to better accommodataions that should be provided for the crew, but they do demand Why should the ship be hampered with a iustice. crew large enough to absolutely interfere with the safe navigation of the vessel? Why should a sailor be allowed more privileges than a shipmaster or officer of the deck or the engineer? In their anxiety to free the sailors, our Senators entirely overlooked the officers of the ship. Again why should the commerce of the Pacific be given to the Japanese?

Senate Bill 136 is so entirely unsuitable, except from a seaman's point of view, that pages could be written concerning the dire effects its passage would bring about on ships flying the Stars and Stripes of America.

Inasmuch as the steamship business is different from any other in the world, legislation affecting it should be considered most carefully. At present, the United States is the only country in the world which does not consider its shipping of sufficient value to the prosperity of the nation to warrant its continuance on the high seas.

What other business necessitates that the men engaged therein leave every sign of human habitation and makes it so absolutely vital that the authority of one man be respected?

From time immemorial, it has been conceded that a ship can not be successfully operated unless the master has the power to exact rigid discipline from his crew. And yet, the United States Senate passes a bill absolutely sanctioning mutiny in the belief that the sailor is deprived of his liberty—is bound—a slave—a serf.

This fact should not be lost sight of—the sailor is bound only for one voyage on a vessel. His "liberty" is taken from him for sometimes only a week, or two weeks or a month or two months, whatever the case may be and for the simple reason that the shipping business could be carried on in on other way.

Every business is done under contract. Supposing, for example, that the shipowner would agree to take a shipment of goods from San Francisco to some port in South America but when the vessel stopped at a Mexican port for coal, it was decided to put off the cargo, accepting half the payment due for the carriage of the goods thus far. The shipper of the cargo would naturally resent this as he did not contract to have his goods delivered at any other port but that for which the goods were destined.

It is the same idea concerning the sailor deserting with half pay. The shipowner wants to know that he can depend on the sailor for the entire voyage—otherwise, his services are of no avail whatsoever.

We wonder if the United States Senate when passing this atrocious bill thought that those angelic persons who are now employed as seamen would hesitate to take advantage of the powers thus conferred on them.

We can not foresee the panics caused by this clause of the bill aimed at our shipowners, for we do not think there is any possibility of its passing the House.

Who is Andrew Furuseth that he should wield such a sway at Washington? He and the other 95 per cent. of our "American seamen" are foreign-born. Still he must go to London to represent the United States while the officers of the ship are given no thought whatever.

It is very easy to discern who framed Senate Bill 136it is all of the sailor and for the sailor. The officers of the ship are not mentioned. As far as Senate Bill 136 is concerned, they do not exist. One thing, if this bill does pass, it will mean as much trouble to the officers of the ship as it will mean to the shipowners. We dislike to think that in the hopes of obtaining the labor vote, our United States Senate passed this measure. but what else is there to think? The bill is impossible if it is intended that ships shall be continued. We hope the time has not arrived when the lawmakers of this country would stoop to consider politics when legislation vitally affecting the interests of the United States are Still what else is left for any reasonable concerned. person to think?

Congress, you are not fair. You are ruining the foreign trade of your country and appear to be doing it without any thought as to what this will finally mean for the United States, of which the shipowner and the officers of a vessel as well as the sailor are citizens.

Do not let all your sympathy go with the sailor. In this instance the "big fellows" are not the shipowners, the sailors, with the powers you are giving them and their unions are the ones who are going to run things hereafter.

Life on the ocean wave would be very enticing indeed, as you would have it. How absurdly fascinating it sounds in speech and on paper, but alas, how impracticable it all is.

Our Congressmen would defy all our treaties, the imigration laws and all else and what for? To give the sailors, poor things, their liberty probably a month or two or a week or two before it is theirs in the usual course.

Why don't you "free" the shipmasters and the engineers or are not they the same kind of slaves as our exemplary sailors.

When the writer recently asked one of the shipmasters in the coasting trade on the Pacific Coast what he thought of the Seamen's bill recently passed by the Senate, he remarked: "I do not see where we will have any room to carry passengers or to handle freight with the numerous men we will be compelled to house for the operation of our vessels." And yet what do the sailors do on these coasting vessels? It is known that they scrub the decks and do other such services but the time of climbing masts and the like is over.

Why was the Scamen's bill passed by the Senate before the International Conference of Safety at Sea was held in London? Do they think that we, a nation that has no ships to speak of, know more than all the other nations in the world?

Yes, send Andrew Furuseth to London—send the representatives of the Navy Department—but do not expect that the United States is going to be adequately represented. Other nations know why we have no Merchant Marine, but as it is to their advantage they merely smile!

Once again our Merchant Marine will not be adequately represented at this International Conference, but as Mr. Andrew Furuseth who has fought so long at Washington in the interests of the seamen is sufficiently capable to



appear as the representative of the entire Merchant Marine of the United States—so be it. However, this country will again stand in the background when the matters of ships and shipping are discussed.

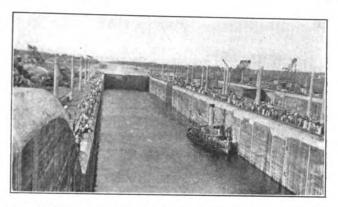
With all the great wisdom of our United States Senate, their inquiry into the "Titanic" disaster, their marvelous recommendations and all, what has resulted? True they know enough to legislate our ships off the ocean, but what else?

The other nations of the world are not continually making new laws concerning their Merchant Marines. They perfect their laws—the result is they all have ships in the foreign trade and we with all of our wisdom and the time we spend in making myriads of laws have nothing in the way of ships.

Our Senators seem a trifle too visionary and not sufficiently practical. They legislate in the "behalf" of our shipowners without once consulting them.

Now it happened in the reign of the great prophet Woodrow that all the publicans and sinners gathered together under the great white dome of the Capitol and they put their heads one over against the other and passed laws and statutes until the very skies began to shiver. A certain dervish named Andrew of the Seven Seas came amongst them and raised a great cry and he threw ashes on his head and rent his clothes-which goes to show that he was a poor man because a chap is pretty hard up when he has to rent his clothes—and he called unto all the Senators, saying, "lo the poor sailor, of a verity he eats but three times a day, he liveth in a jail and he longest for the Flesh Pots of Egypt." And the Senators hearkened unto the cry of the dervish and passed many laws so that the sailor could desert his ship and thus help to build up a great merchant fleet and fill the heart of the nation with just pride.

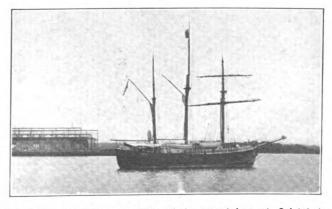
Now in these days on the far western shores of the great waters there dwelt a simple guy who was aweary and fain would rest, so he called his physician. The physician felt of his pulse and said "Twodollahs," for that was the oath by which all physicians swore. "Of a verity my son thou must have rest, flee unto the great waters even unto the far north and breathe the pure air of the glaciers and close thine eyes in peaceful slumber." Now the simple guy hearkened unto his physician and took passage for the land of the Eskimo. Now it came to pass that all the sailors departed from the ship in the village of Nome and although the Master distributed cuss words from Dan to Beersheba, they came not back and the ship lay and rotted waiting for a crew. Now after many years had passed away the ship returned whence she came and a feeble old man tottered down the gangplank and wended his weary way homeward, but his wife had departed with the chauffeur, his son had been in jail lo these many years, so he called his physician and cursed the follower of Esculapius and turned his face to the wall and Thus was the simple Cuss called to his fathers a martyr to the noble cause of building up an American Merchant Marine.



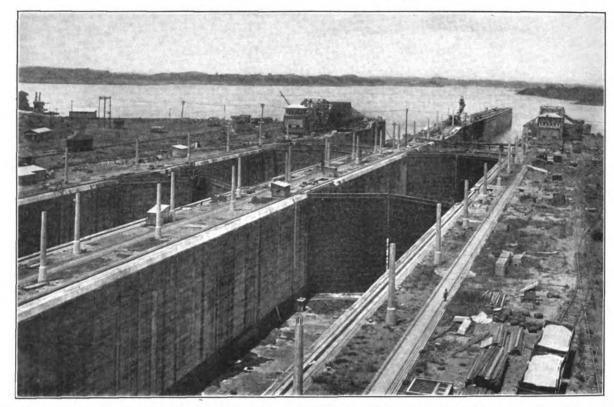
View looking north toward Atlantic entrance, Panama Canal.



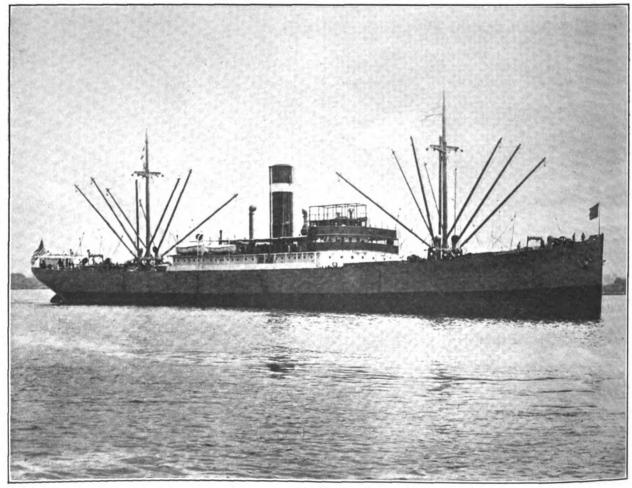
Culebra Cut looking south, Gold hill shown on the left. This photo shows the chief obstacle of cut in foreground.



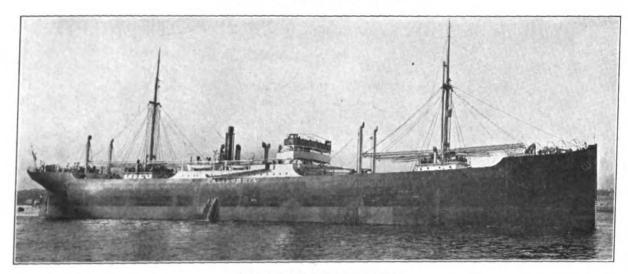
Exploring ship "Fram." This photo was taken at Cristobal.



Upper approach to Gatun Locks showing Gatun Lake level at about elevation of 70 ft. above sea level. The normal or operating level is 85 ft. At an elevation of 70 ft. there is 33 ft. of water above the upper sills of Gatun and Pedro Miguel.



The S. S. "Santa Clara," which arrived at San Francisco on October 26 on her maiden voyage, is owned by the Atlantic and Pacific Steamship Company. This vessel was built for service via the Panama Canal and will be operated in conjunction with the S. S. "Santa Cruz," S. S. "Santa Cecilia" and S. S. "Santa Catalina." The "Santa Clara" is 420 overall, 404" B. P. and 53" 9" moulded depth.



MOTORSHIP "CALIFORNIA."

MOTORSHIP "CALIFORNIA" COMPLETES SATIS-FACTORY TRIAL TRIP.

Messrs. Burmeister and Wain, of Copenhagen, Denmark, inform us that the motorship "California," built for Det Forenede Dampskibselskab (The United Steamship Co.), of Copenhagen, carried out her official trial trip the 30th of September to the entire satisfaction of the owners.

The ship is built to the Bureau Veritas class 1 Div. 4 3/3 L. I. I. PR. A. & CP. and is of the following dimensions: Length 405' 0", breadth 54' 0", depth 35' 0", draught 23' 3", displacement 11,040 tons, d.w. capacity 7200 tons.

The "California" is built as a cargoboat but can also take a small number of passengers on board. The machinery consists of two eight-cylinder main engines working on the four-stroke cycle. The dimensions of cylinders are 540 m/m bore and 730 m/m stroke. These engines develop at 140 revolutions per minute in total 2700 I. H. P.

The ship is fitted with two auxiliary three-cylinder four-stroke Diesel engines which at 210 revolutions per minute normally develop 180 B. H. P. each. Each of these engines drives one 50 K. W. direct current dynamo on 100 volts, and one three-stage compresor.

The arrangement is chiefly the same in this ship as in the motorships formerly built by Burmeister & Wain, the only alteration being the cargo winches which are steam-driven. The ship is therefore fitted with a boiler with oil-firing according to Gebrüder Körting's system. The heating surface of this boiler is 1000 square feet. The steering gear is electrically driven and of the Hele-Shaw system. Further, the anchor-windlass is electrically driven as are also the cooling water pumps, the pump for forced lubrication, bilge pumps and fuel pumps for pumping up to the daily supply tank.

On the main engines an alteration has been made in that each cylinder is fitted with a fuel pump. The reversing takes places by means of a compressed-air cylinder of a similar construction to the Brown's gear applied for reversing of steam engines. These alterations have proved to be very good.

The oil consumption during the trial trip was 169 grammes per shaft horsepower, including the oil consumption for the auxiliary engines for driving all the auxiliary machinery and producing the necessary light on board the ship. During the daily work this consumption will be considerably lower, as the consumption was measured a very short time after starting of the engines.

A speed of 11.84 knots by 2880 I. H. P. was developed on the trial trip of the "California."

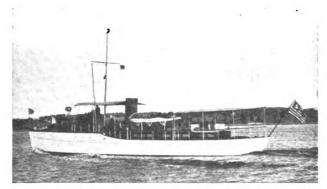


Cannery Tender "Jack Horner" afire on beach near Excursion Inlet. A vessel is now building for the Pacific American Fisheries Company to replace the "Jack Horner." This new vessel will be equipped with a 100-horsepower Diesel engine.

DIESEL ENGINES FOR PACIFIC COAST SERVICE.

The American-built Diesel engine is being introduced at Seattle by Arthur Fuller, who has established at 68 Marion street the Pacific Coast branch of the New London Ship & Engine Company. An engine has already been sold to the Kitsap County Transportation Company for installation in a new passenger boat they will build for service to Bainbridge Island points. Another engine has been sold to the Pacific American Fisheries, of South Bellingham, for installation in a cannery tender 87'x17'x6' 6", which vessel is now under course of construction at the yards of Nelson & Kelez on the East Waterway. Eighteen of these engines are being installed in the United States submarine torpedo boats that are building at the Seattle Construction & Dry Dock Co. and at the Union Iron Works, San Francisco. A quarter of a million dollars cash was paid for the exclusive American rights for this type of engine as developed by the leading engine builders of Europe and definite plans are already under way for the manufacturing of these engines at Seattle. Aside from the simplicity of design, construction and operation of the Diesel engine, perhaps the most important feature in connection with its introduction on the Pacific Coast is the remarkable economy in operating cost due to the engine using California asphaltum base crude oils directly inside the cylinders. The coming of the Diesel engine to this Coast means a greatly enlarged field for crude petroleum.

THE IDEALIA, DIESEL MOTOR YACHT, RUNS AT LOW COST.



The Idealia, a Diesel Motored Yacht that Costs 21/2 Cents a Mile for Fuel.

Covers a Sixty-Mile Course in Five Hours at Two and One-half Cents a Mile.

America's first Diesel motored yacht, the "Idealia," was recently given an official trial on the Hudson River and she performed so creditably that even those who

have been most pessimistic were forced to admit that a new epoch in marine power is at hand.

American marine engineers have been accused of being behind those of other nations in the development of the motor which is intended to substitute crude oil and other cheap undistilled petroleum products instead of expensive gasoline, but the tests show that American engineers have quietly considered the problems involved and have outdistanced all foreign competition.

The Diesel motored yacht "Idealia" was built by the Electric Launch Co., of Bayonne, N. J., and her engines by the New London Ship & Engine Company, of Groton, Conn., and Seattle, Wash. During the test she ran for a distance of sixty miles at the rate of twelve miles an hour without a hitch.

In the five hours' run from the Columbia Yacht Club, off the foot of West Eighty-sixth Street, Manhattan, to Haverstraw on the Hudson and return, the 150 horse-power motor used seven gallons of crude oil an hour, or a total of thirty-five gallons, costing \$1.14, and also

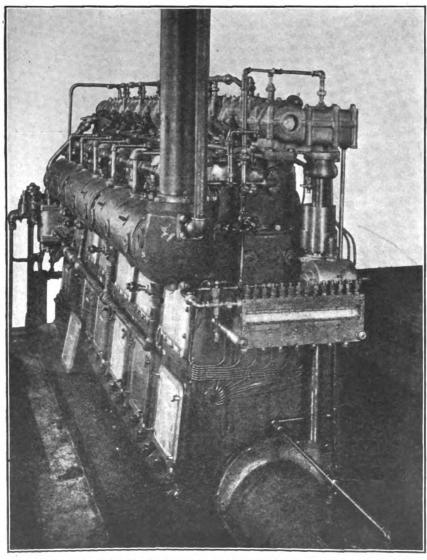
forty cents' worth of lubricating oil, which represented a total cost of \$1.54 for sixty miles, or a cost of slightly more than two and one-half cents a mile. The cost of driving a yacht of the same dimensions with a gasoline motor of similar power over the same course would have been approximately \$13.90, which shows a saving of \$12.36, to say nothing of the practical elimination of risk and reduction of insurance because of the absence of gasoline.

The "Idealia" is 84 feet long, with a beam of 14 feet and a draught of 4 feet. She has excellent cruising accommodations and is owned by Mr. H. R. Sutphen of the New York Yacht Club, while her engineer is H. F. Moore.

The great objection to Diesel motors, viz: the first cost, has been eliminated, and the cost of these crude oil-burning motors has been reduced so that it is but about one hundred and twenty-five per cent. of the cost of the ordinary gasoline motor of equal power.

The control of the Diesel motor in the "Idealia" is almost as flexible and simple as that of a steam engine, and there is no tedious cranking to contend with.

The propulsion of an eighty-four-foot yacht, at the rate of twelve miles an hour, at a cost of two and one-half cents a mile, is a new record from an economical standpoint, and in addition there was no disagreeable exhaust, it being almost invisible and odorless.

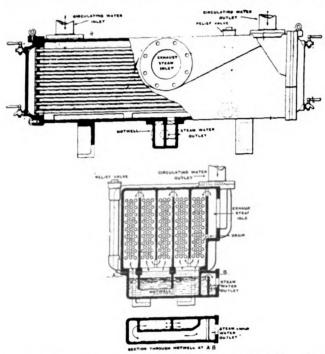


Niseco Diesel Six Cylinder Which Drives "Idealia" 12 Miles Per Hour on 7 Gallons Two-Cent Fuel Oil, or a Cost of About 7 Cents a Mile.

THE AUXILIARY CONDENSER.

It is very interesting to note the manner in which winch condensers have been adopted on cargo boats. The old system by which the donkey boiler was fed from the sea and discharged its steam overboard was always an engineering barbarity, but the change did not come until the exigencies of competition compelled the shipowner to recognize that such an arrangement from a commercial standpoint was fundamentally bad.

Maximum economy, however, can only be obtained when the equipment will produce high thermal efficiency. The Contraflo auxiliary condenser made by Messrs.



Richardsons, Westgarth & Co., Ltd., of Middlesbrough, England, is very good in this respect. In an ordinary condenser, especially when lightly loaded, the steam is condensed by the upper rows of tubes, and the resultant water, by falling over the lower tubes, is necessarily cooled and must be heated up again, and the present design is adopted to prevent this loss.

It comprises a number of condensing compartments in communication with each other, and only when the first compartment is fully loaded does the second one come into operation, and so on. This causes a minimum cooling of the condensed water and so marked is the effect in this auxiliary condenser that the feed water is continuously discharged into the filter at about 180 degrees, or as hot as the float controlled harbor feed pumps can deal with. When it is remembered that for every ten degrees gained in the temperature of this feed water there is a reduction of one per cent. in the harbor coal bill, the commercial value of such high temperature is The apparatus, in fact, embodies a new technical effect in its operation on shipboard, and its utility has been abundantly proved on many steamships. Its condensing efficiency is so high that, compared with an ordinary condenser, its size is reduced by at least onethird, whilst for thermal efficiency it is generally acknowledged to have no equal.

The tube plates are of rolled brass, the tubes are packed by screwed ferrules, there is a detachable hotwell that can be removed for cleaning purposes, and the design throughout is strong and substantial. It is therefore an important improvement which goes far to effect

one of those economies which, apparently small, really mean so much on board ship.

SOCIETY TO HOLD TWENTY-FIRST GENERAL MEETING.

The Society of Naval Architects and Marine Engineers will hold their twenty-first general meeting at New York on December 11th and 12th.

The following papers will be read at this meeting:

Thursday, December 11, 1913.

 "Relative Resistance of Some Models with Block Co-efficient Constant and Other Co-efficients Varied."

By Naval Constructor D. W. Taylor, U. S. N., Vice-President.

- "Experiments on the 'Fulton'; Effect of Bilge Keels."
 By Professor C. H. Peabody, Member of Council.
- "The Safety of Passenger Ships at Sea."
 By Mr. G. W. Dickie, Vice-President.
- "Structure of Vessels as Affected by Demand for Increased Safety."

By Mr. William Gatewood, Member.

5. "Stability of Life-boats."

By Professor H. A. Everett, Member.

6. "A Substitute for the Admiralty Formula."

By E. A. Stevens, Jr., Member.

- "Diesel Engine in Marine Propulsion." By Mr. John Reid, Member.
- 3. "The Evolution of the Lightship."
 By Mr. George C. Cook.

Friday, December 12th, 1913.

9. "Construction and Operation of Western River Steamers."

By Mr. R. C. Wilson.

10. "The Influence of National Policies on Ships Design."

By Captain W. L. Rogers, U. S. N.

11. "Strains in Hulls of Ships, showing the Effects of Pitching and Rolling."

By Mr. James E. Howard.

- 12. "Change of Shape of Recent Colliers."
 - By Naval Constructor S. F. Smith, U. S. N., Member.
- 13. "General Organization of a Navy Yard."
 - By Captain L. S. Van Duzen, U. S. N., Associate Member.
- 14. "Notes on the Performance of S. S. Tyler."

By Mr. E. H. Rigg, Member.

TESTS OF BERING RIVER COAL NOT YET COMPLETED.

The Navy Department has not yet announced nor formulated any policy regarding Alaska coal. Secretary of the Navy Department Josephus Daniels advises the "Pacific Marine Review" that no report has been received concerning the quality and quantity of coal mined by the expedition in the Matanuska fields of Alaska. The tests of the Bering River coal were not completed when the Secretary of the Navy Department sent us this information, November 13, 1913.

We suggest a nice ocean voyage for our entire Senate—then probably they would be just a trifle more considerate of the industry they are now endeavoring to destroy.

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SHALL GENERAL AVERAGE BE ABOLISHED?

OME thirty odd years ago the insurance and average adjusting fraternities were exercised about the recommendation of a committee of Lloyds and delegates to a meeting that general average should be abolished entirely and that a loss of a general average nature should lay where it fell and since that time there have been numerous advocates of this, as considered by some, drastic move to abolish a cumbersome practice.

In its infancy a general average adjustment was resorted to only in case of jettison of cargo for the saving of the entire venture from total destruction. This under the Rhodian Laws, but later it was extended to cover the cutting away of a mast for the same purpose. Later still the practice was extended to cover any sacrifice made by the master for the general benefit and the loss resulting from such action on the part of the master, whether considered by him as possible or probable, has been sanctioned by law as the subject of contribution in general average. Take the case of a steamer ashore with cargo on board and the master orders that the engines shall be reversed in an attempt to float her. Ship and cargo are in grave danger of becoming a total loss unless she is relieved from the strand. The engines are intended to propel the vessel in free water, and when used for the purpose of floating a stranded vessel they are put to an unusual strain for which they were not intended, and while the master does not anticipate any damage, yet, if such occurs, the law holds that this is a voluntary sacrifice and the cost of repairing the damage must be contributed to by all interested. In this simple case the "Abolishionists" would have such a loss fall upon the ship owner or his underwriter and the cargo owner or his underwriter would be free of claim, although his property had been saved by this forced use of the machinery.

The latest advocate for the abolishment, in part, of general average is, strange to say, the chairman (last year) of the Association of Average Adjusters of the United States, but his position may be explained by saying that primarily he is an underwriter.

In an address before the annual meeting of the Association he advocates the abolition of a general average adjustment so far as sacrifices are concerned, but admits of its necessity where actual expenses are involved. He states that he has taken a dozen cases from his books which have occurred in the past two years in which the general average was made up almost entirely of sacrifices and he finds that the cost of proving, adjusting and collecting the general average was 18% of the entire claim. He further states (if the loss lay where it fell):

"The underwriter on cargo has, immediately after the sacrifice of the merchandise insured by him, paid the loss, say \$100. If the loss lay where it fell that would end the matter, but under our general average system that \$100, during the lengthy and costly process of adjustment, becomes swollen to almost \$118."

It is rather difficult to follow this line of reasoning. Suppose a consignment is made worth \$100. The vessel during the voyage experiences a fire and in the efforts to extinguish the fire this consignment is ruined by water used to avert a total loss of the entire venture. If the loss lay where it fell the owner of the goods or his underwriter would be out \$100, but under our general average system that amount would be made good to the owner and he would recover it less his contribution to other similar sufferers and the cost of proving and ad-

justing the whole matter, so that instead of the loss of \$100 being swollen to \$118, it would be reduced to say \$60, \$65 or \$70, as the case might be. It is urged, however, that the law of averages will correct this for the one who loses to-day on account of a sacrifice will gain to-morrow by escaping contribution to others who have lost similarly.

If there were nothing but sacrifices to be considered this proposed treatment might, in the end, work out equitably. If a ship at sea has a fire in the cargo and extinguishes the fire with her own appliances and the venture is completed without extra expense to anyone, then, and then only, could the parties in interest escape, by mutual agreement to let the loss lay where it fell, the expenses of a general average adjustment. cases, however, are rare. But it frequently happens, more often than not, that a ship on fire at sea receives assistance from other vessels, in the way of assisting to extinguish the fire or towing to a place where other assistance can be procured, or otherwise. Assistance of this nature involves claims for salvage, and while salvage, per se, is not general average, yet it is apportioned on values, and as the saved value is the one to be taken into account, there is the same amount of labor involved in procuring these values and checking them. It is true that if this idyllic system could be adopted the time and expense necessary to arrive at allowances in general average would be avoided and the cost of the adjustment lessened, yet it is doubtful if this small saving would result in much benefit or satisfaction.

No method was shown by which this change could be brought about, but it has been suggested that bills of lading might provide that neither ship nor shippers would claim in general average for sacrifices and also contain an agreement that one shipper would not claim against another. To make this effective it must be universal and every owner of a commercial ship must agree to issue no other form. Otherwise it might happen that goods destined for trans-shipment to a connecting vessel would be shipped originally under this form of bill of lading, yet when they reached the connecting vessel would be in company with goods not shipped under that form and endless complications would arise. It might even be that some statute laws of maritime countries would have to be changed.

The fundamental idea of general average is that what is sacrificed for the benefit of all must be paid for all. From this simple foundation has arisen a complicated structure which taxes adjusters, lawyers and courts. Cumbersome as it is it makes for equity and while much may be said in favor of the advocates of its abolition, the difficulties in the way are so great that adjusters of the present day need have no fear of being compelled to seek another profession, that of an underwriter, for instance.

BIG PIERS STARTED.

The building of the big 1,000-1,200 foot piers at the foot of West 46th street, New York, in the encouragement of which project the New York Chamber of Commerce and others have been long active, was begun officially on November 5th.



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CASUALTIES AND MISCELLANEOUS REPORTS.

"BEAVER," Str. From Portland Oct. 28th for San Francisco was in collision on Oct. 30th off Fort Bragg with the steam schooner "NECANIUM" and suffered considerable damage. She proceeded to San Francisco where she was docked for repairs.

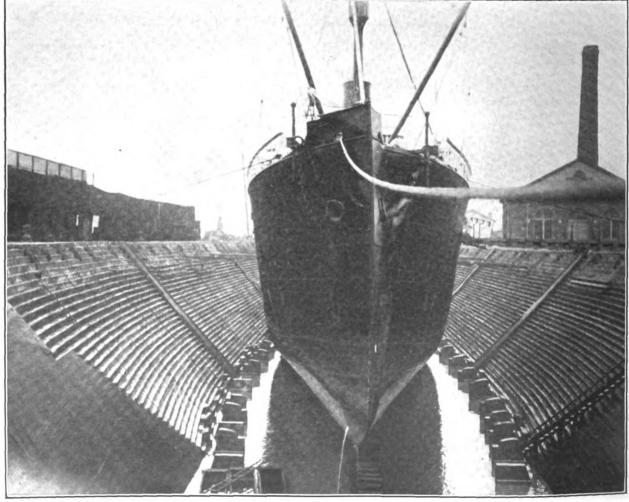
"CLAVERLEY." From Portland, Ore., Sept. 13th with grain for Limerick, went ashore on Oct. 30th near Punta Arenas, but was floated the next day. It is reported that No. 1 hold and the fore peak were full of water.

"ELVIRA," Whal. Schr. From San Francisco May 27th for the whaling grounds, is reported as a total loss together with her cargo. No particulars have as yet been received.

"HUDSON MARU," Jap. Str. From Portland Oct. 21st for Hiogo, went ashore at the mouth of the Willamette River, but was floated after a channel was dredged. She proceeded apparently undamaged.

"MANGA RIVA," Bk. From Philadelphia Oct. 9th for San Francisco, put back to Lewes, Del., on account of mutiny on board. When attempting to enter Delaware Bay she ran ashore on a shoal just outside the capes and remained fast for about four hours. She was subsequently floated apparently undamaged.

"MERCED," Str. Previously reported ashore near Cape Gorda, has been given up as a total loss. Some gear was saved, but probably not of enough value to pay the expenses of saving.



Showing damage done to Steamer "Beaver." The "Beav er's" repairs were completed in record time by the Union Iron Works and this vessel was returned to service after only thirteen days.

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"MONTANAN," Str. From New York Oct. 15th for Puerta, Mexico, stranded Oct. 18th off Fowey Rock, but was floated the next day with the assistance of tugs. She had on board a large quantity of cargo destined for Pacific Coast ports of the U. S.

"NECANIUM." See report above regarding Str.

"Beaver." The steamer received considerable damage about the bow but was able to return to San Francisco without assistance.

"NOME CITY," Str. While lying at Pier 38, San Francisco, took fire on the morning of Nov. 18th and suffered slight damage.

"PLEIADES," Str. From San Francisco Nov. 8th for Ancon, was in collision with the Str. "Thos. L. Wand," and owing to damages sustained was obliged to return to San Francisco the next day. No. 2 hold

Another view showing the S. S. "Beaver" while undergoing repairs.

was full of water and it was necessary to discharge the cargo in order to effect the necessary repairs.

"PRENTISS," Str. From Eureka Nov. 8th for San Francisco, struck on a mud bank while leaving the harbor and in the effort to pull her off the rudder carried away. She was later towed to San Francisco.

"SADO MARU," Jap. Str. From Seattle Nov. 4th for Yokohama and Hong Kong, is reported as having a fire in No. 1 hold. She was due to arrive at Yokohama on Nov. 22nd.

"SIMLA." Before reported ashore near Pt. Gorda and subsequently floated with the assistance of the steamers "Nan Smith" and "Adeline Smith." It is reported that the claim for salvage has been settled by agreement for the sum of \$25,000.

"THOS L. WAND," Str. See report under "Pleiades" above. The "Wand" suffered comparatively little Damage.

CONTRACT AWARDED FOR CONSTRUCTION OF WHARF AT BURRARD INLET, VANCOUVER.

A contract has been let by the Department of Public Works, Ottawa, to Henry, McFee and McDonald, Vancouver, B. C., for the construction of a wharf on Burrard Inlet, between Salisbury and Commercial Drives, Vancouver.

The work to be done consists of excavating to a depth of 35 feet at low tide over the slips on each side of the wharf, and 36 feet over the area covered by the cribs, or such other depth as may be ordered; the construction of lines of timber cribs sheathed with reinforced concrete, and filled with stone ballast with a mass of concrete superstructure forming a wharf 800 feet by 300 feet; also construction of two bulkheads of timber crib-work sheathed with reinforced concrete with a mass of concrete superstructure at the shore end of the wharf, each 40 feet long; the filling in between the two lines of cribs to the level of the coping of the mass concrete superstructure and at the back of the bulkheads to the railway right of way; and to deposit layers of rubble and broken stone and level the same to receive the cribs.

The contract calls for the employment of Canadian labor, the use of Canadian material, and the completion of the work in two years. Its estimated cost is \$1,250,000.

On December 4 an election will be held at Santa Cruz, Calif., to decide whether authority shall be given the City Council to issue bonds for \$165,000 for the construction of a wharf. The consensus of opinion at Santa Cruz is that the election will carry and a municipal wharf will be constructed by the city.

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PERUVIAN FLAG TO BE SEEN IN SAN FRAN-CISCO HARBOR ERE LONG.

The Peruvian Steamship and Floating Drydock Company are now operating four steamers between Balboa and Peruvian ports, all of which vessels burn oil as fuel and are of the twin screw type. These ships are beautifully furnished throughout, this being one of the requisites of the South Pacific Coast trade.

The Peruvian Steamship and Floating Drydock Company is subsidized by the Peruvian Government, a new issue of stock of £250,000 sterling having been made a fortnight ago at 6 per cent, and guaranteed by the government. In addition to this, the company receives a yearly subvention from the Peruvian Government of £30,000 sterling.

The newly-elected president of the company is Mr. Pablo La Rosa, one of the managers of the Bank of Peru and London; the general manager, Mr. Loftus J. Nunn, was elected to his old office.

The company assures a regular weekly service between Callao and Panama, leaving Callao on Monday of each week, so as to arrive at Panama on the following Monday after making the intervening coast ports, which is according to the quarantine regulations. On account of the strict quarantine regulations, enforced by the Isthmian officials, no call will be made at Guayaquil on the north bound trip. On the south bound trip Guayaquil is included as a port of call.

Passengers and freight to Panama from Guayaquil will be handled as heretofore, from Guayaquil to Paita on the south bound trip transfer being made at Paita to the north bound Peruvian line steamer, which is quite an accommodation to passengers from Guayaquil north.

Mr. Carlos F. De Berna has been retained by the new board of directors as the General Pacific Coast Agent of the company, with headquarters at San Francisco. His reports concerning the ports of San Francisco, Seattle, Portland, Victoria and Vancouver were read with great interest at the annual meeting of the company. It seems very probable that the Peruvian Steamship Company will extend its service as far as San Francisco and probably further north.

Mr. De Berna has received assurance from the merchants at large as to their co-operation, and it is thought that the Peruvian flag will be seen in San Francisco harbor before very long.

The Agencias De Berna represent Mr. Carlos F. De Berna, who has been traveling in South America since 1900 and in Central America since 1890. This agency has the control of several of the best known brands that go into Central and South America, and besides being the general agents for Central and South America of the Gundlach Bundschu Wine Company of San Francisco, and the Buffalo Brewing Company of Sacramento, are the sole representatives of Messrs. Getz Bros. & Co., Inc., for the Canal Zone, Panama, Colombia, Venezuela, Ecuador, and the principal centers of Central America. The Agencias De Berna control their own flour brands and make a specialty in shipping potatoes, garlic, onions, and fresh fruits to South American points, as well as refrigerated California and Oregon apples to all points abroad. The offices of the Agencias De Berna are situated in the Sherwood Building, 320 Market street.

CONSTRUCTION UNDER WAY AT YARDS OF UNION IRON WORKS COMPANY.

The repairs to the steamer "Beaver," owned by the San Francisco-Portland Steamship Company and which repairs were necessitated by collision with the steam schooner "Necanium," were completed by the Union Iron Works and the vessel delivered in the record time of thirteen days. The "Beaver" was delivered alongside her pier on the 16th of November, the work of repairs being completed a day ahead of contract time.

The repairs to the S. S. "Pleiades" and the "Thos. L. Wand," which were also in collision, are well under way at the works of the Union Iron Works Company.

The repairs to the bark "Simla," which were very extensive indeed, have been completed and the S. S. "Napa Valley" has been in drydock for some repairs to her wheel.

The steamer now building on the Isherwood system of ship construction for the Associated Oil Company is about 65 per cent. completed; the motor-driven oil barge for the Standard Oil Company is about 40 per cent completed; the three submarines building for the United States Government are about 80 per cent. completed and will be ready for launching in January or February.

The Union Iron Works Company has purchased the "Iaqua," which they intend converting into an up-to-date salvage boat. The "Iaqua" will be fitted with a powerful towing engine and windlass and a 50-ton derrick. This vessel will also be equipped with the necessary powerful pumps, tackles, boilers, etc., necessary for salvage work. Arrangements will be made for increased accommodations aboard the "Iaqua" for passengers and officials interested in salvage work.

STEAMERS "MARIPOSA" AND "ALAMEDA" TO BE ALTERED.

The Alaska Steamship Company is to make considerable alterations to its steamships "Mariposa" and "Alameda" this winter, for during this period of the year, Alaska traffic is not heavy and the company will be able to take the vessels off the run for the purpose of making these repairs.

An entirely new house will be constructed on each vessel above the forward part of the present house, the wheel and chart rooms with captain's room and officers' quarters with bath being included in the plan for the new structures. This will give additional space in the forward part of the ship which will be utilized by new two berth passenger staterooms.

Additional rooms will also be built aft on the upper deck and on the saloon deck, the intermediate space will be transformed into three berth first class rooms.

The work will be done by the company's own force at Pier 2, Seattle, under the direction of Superintendent R. R. Pierson and the changes will be completed in time for the spring rush of 1914. The changes will give about ten more passenger rooms to each ship and the additional house will give the vessels quite an improved appearance.

The steamer "Willochra" which took up the running of the "Aorangi" last trip has temporarily been withdrawn from the San Francisco service of the Union Steamship Company of New Zealand. The "Aorangi" has during the last few months been undergoing a thorough overhauling, but she will again enter the San Francisco trade and will make one round trip, leaving San Francisco the 7th of January.



THE LOG OF THE S. S. "CONGRESS."

The steward purchased grape fruit, bananas and onions at Brighton. The grape fruit cost two cents each, and the California or even the Florida species are a delusion and a snare when compared to the Trinidad variety. This luscious fruit melts in your mouth and is entirely devoid of woody fibre. A man who would insult one of these grape fruit by putting sugar on it has our profound sympathy. Bananas cost one cent a dozen. Cringing slave of a reader, it would have done your heart good to see the steward and Slops hauling provisions in a native mule cart with niggers to the right of them, niggers to the left of them, niggers in front of them and an endless train of the same complexion behind. The steward made an unfortunate venture in cigars. The noxious weeds arrived in safety at the ship's side and then went overboard into sea water with a generous mixture of fuel oil. Some were rescued and dried out, but the taste and smoking qualities of those cigars were utterly indescribable. Indeed, when we tried them we were forced to admit that the English language is a very poor medium for the transmission of thought. The Doc volunteered some twenty-four syllable medical terms, but even these fell far short, so we went to the captain and got him to express an opinion for us.

One of the most interesting sights at Brighton is the morning swim. About one thousand of the inhabitants sleep out of doors, and during the course of the night they become full of ants and other insects, and early in the morning they all flock down to the surf, wade in clothes and all, and can be seen industriously getting rid of their overplus of population. The storekeepers are all robbers and villains of the deepest dye, and when you buy sugar, flour or meal they make no allowance for the fact that at least one-quarter of the purchased weight consists of bugs.

Of course all visitors to Brighton are shown the asphalt lake. The lake is somewhat back from the shore, being surrounded by a low range of hills. It presents a dark, muddy surface with here and there a vivid green island. They take out 850 tons each day and the next morning the hole that was dug in the surface is filled up level again. The "Sing Foo," an American bark from New Orleans, was lying at the wharf, and her captain was jolly glad to see us and spent much of his time on board. Half his crew were on shore in jail and he seemed willing to let them stay there till his clearing date-Jamaica rum again. The "Sing Foo" was in splendid shape for a craft twenty years old, not looking over five, and her captain informed us that a new fore-top was the only thing on board that was not on the original ship.

There are several universal words in the English language, and one of these is "beer," so when some one whispered this wonderful talisman into the ear of a listening black the creature's face lit up in complete understanding. This explains why, just as the sun was going down, a mysterious barrel marked "Sal soda" was hoisted on board. Now our friend Mr. Zeh is of German extraction and his suspicions were therefore somewhat easily aroused. One of the engineers was proceeding to take loving and gentle charge of the barrel when Mr. Zeh demanded to know its contents. "Sal soda, sir." "Queer place to buy Sal soda," com-"Go and ask the chief," advised the mented Mr. Zeh. engineer. Now the heart of the chief was in the right place and long before he could be located that precious

barrel of Sal soda was stowed deep down in what the mariner calls the "guts of the ship."

The British port officer had discharged all his colored help and taken up quarters on board the "Sing Foo." He informed us that his servants had a slight leaning towards dishonesty, that they had removed nearly everything in his house, and that when they had finally taken the bed and bed clothes he had come to the conclusion that enough was sufficient. We do not know whether it was the charm of our company or the quality of the liquors on board, but this individual visited us with great regularity about every fifteen minutes. Poor devil, it must have been a godsend to see a strange face.

Slops will look you straight in the eye and without changing a muscle will tell you that there are suffragettes on Trinidad. He even goes further and avers that he saw one. This proud despiser of the pantaloon was in the act of subjugating a mere husband and was expounding the doctrine of female rights and giving vent to a catalogue of female wrongs in a manner that was fearful and wonderful to behold. He further maintains that the victim had all the ear marks of a jelly fish on an extremely hot day. However, with all their dirt, squalor, unclothed brats, Jamaica rum, ants, vermin and razor-back hogs, they are happy, so we will leave them to their aimless hand to mouth existence and go back to the ship. Monday evening we backed out from the wharf in a wide circle, playing the searchlight alternately on the buoys and on the beauty and pride of Brighton, which was assembled on the pier head to bid us a reluctant farewell. Like all tropical ports, Brighton leaves a good impression on the departing visitor, for from the sea one sees only its beauties, and its squalor was softened by the soft light of the tropical night. Here endeth the first leg.

Leg Two.

It was Monday evening, August 18th, that we pulled out from Brighton and the morning showed us the open sea. In leaving Trinidad we were getting away from the romance of the Spanish Main where the worthy Spaniard used to be so busily engaged in converting the heathen and then sending them out of this world of sorrows so that they could enjoy the fruits of their conversion without delay. But why romance when the only thing that is worrying the ship's officers is a 2½ knot current that we have to buck all the way to Cape St. Roque.

It was now the season for sitting out on deck at nights and having various constellations pointed out by those who were wise in the lore of the sky. There has always been so much of mystery and enchantment connected with the Southern Cross that it can well be imagined that we lost little time in locating a constellation which has perhaps appeared more in song and story than any other. Even the engine room crew forgot their hilarity and came out on deck to gaze at the stars.

We were not always left to enjoy the beauties of the sea and sky, for the Steward would approach and say in soft enticing tones, "I have a fine job, a regular political job, one I can only trust to good reliable men." It was always the same yarn and like regular village Reubens we always fell for it. A few days out from Trinidad we passed a French barque with everything but studding sails set and we had an experience which might not be had again in a hundred years. We actually



Visits to the fo'castle showed us that we had a versatile lot forward. Chips, Mr. Brown, and the Bo's'wn Mr. Olsen could always be found busily engaged. Chips would sit sailor fashion on the floor doing drawn work which any lady might envy, and Mr. Olsen tailor fashion on the seat doing needle work. These two and the quartermasters provide a fund of wonderful tales of the sea that are at once entertaining and instructive.

One of the most interesting phenomena which we saw during this stage of our journey was a sharply defined line in the ocean running almost at right angles across our course. We had been running in sounding depths and evidently ran over a precipice, for the water changed from a light transparent color to a deep indigo and the change was along a line as sharply defined as a survey line. About this time also we witnessed a green cloud. It was just at sunset and it held its beautiful emerald hue for upwards of an hour.

During our run along the northeastern coast of Brazil, the rumors concerning a grave and important event became more and more persistent. This was no other than our impending initiation into the brotherhood of deep-sea sailors. What was going to happen to us was the subject of lively debates at meal times and our curiosity, to put it mildly, was aroused. If it is true that "forewarned is forearmed" then we had as many arms as a centipede, for our grave situation on the brink of a direful event was drummed into us morning, noon and night. Not only were the warnings conveyed in words, but silent industry in the fo'castle and sly questionings as to the extent of our former sea travels all served to spell foreboding with a capital "F."

The great day arrived on Sunday, August 24th, and, iniquitous reader, we woke with a do or die feeling, a determination to accept whatever the day brought forth without quailing and a certain sense of comaraderie and partnership in face of the common danger. Mark you this, however, we were not the only candidates. There were novices in the engine room and likewise the steward's department yielded up victims for the sacrificial altar. The purser, who sometimes loses that small particle of common sense which is at once his pride and adornment, was the first to venture out on deck. He was promptly seized by two policemen quartermasters who escorted him aft to the fantail where King and Queen Neptune were holding court amid a crowd of admiring and obsequious subjects. Poor purser. The first person he caught sight of while searching the court for a friendly countenance, was the Lord High Executioner arrayed in the bloody apron of his office. Neptune, whose beard, like Abraham's, reached far below his bosom, roared out "officers do your duty," and Mrs. Neptune smiled sweet encouragement on the Lord High Executioner. The purser was roughly seized, conveyed to the block, thoroughly blindfolded, his face and head anointed with a mixture of red ochre and graphite and the barber proceeded with his work. The razor was none too sharp and the scraping process was little better than one sometimes receives from a drunken barber. ordeal over the victim was roughly seized on either side and tossed through the air, landing in a large tank of sea water, where two quartermasters ostensibly placed there to assist, saw how near they could come to drowning him without quite turning the trick. The victim was then unceremoniously rolled out on deck and the ordeal was over. This constitutes you a deep-sea sailor and never again are you forced into a like situation, but thereafter may watch with joy and pleasure the fate of other novices. The fun lasted the best part of the day as there was a large number of candidates.

One cowering individual avoided the watchful eye of the police and escaped by remaining below. When old Neptune heard of this, his very beard quivered in fury and he so far forgot his kingship as to leave the throne and go in search of the delinquent in person. Now ever since Adam and Eve made their first venture in apple dumplings, it has been considered a tried and true adage that "a man fights best in his own township." Alas poor Neptune, he should have never ventured below. Some simple oiler looked down from the upper engine room grating and viewed the wrathful god in wonder and alarm. "Neptune," thought he, "is about to fall in a fit through his consuming anger." Now the oiler was a simple cuss and his heart beat in sympathy when he saw Neptune's condition. He racked his poor brain for something which might remedy the raging temper of Neptune and a faint recollection entered his fuddled head about pouring oil on troubled waters. The thought was father to the deed and a whole can of cylinder oil descended on the curling locks and flowing beard of the Father of the Seas. Oh dissipated and desperate reader would that our pen might do justice to the bos'n's language, alas that Susan B. Anthony or Carrie Nation were not at hand to catch the magic eloquence that dropped from his lips like a ton of bricks. Even Solomon in all his glory never listened to such an outpouring of forty syllable purgatorial wisdom. The chief engineer bounded from his bed like a shuttle cock thinking that a cylinder head had blown off the engine, the ship trembled to her uttermost being and the Captain phoned down to know if a boiler had exploded. We may go to sea for forty years and never again hear such a beautiful example of the linguistic art. The great event, however, was now over and no longer did Slops and Doc and the purser act like landlubbers, but walked with a swagger and used or misused sea terms as the case might be.

Two days after crossing the line we rounded San Roque, but as we were sixty miles at sea, we did not catch a glimpse of the headland. Our course was now west of south and sea life began to become more evident Occasionally porpoises would swim alongside, twice a whale rose right under our bows and cape pigeons and Mother Carey's chickens, so called from the fact that they make a clucking noise like a hen, and huge albatrosses began to follow the ship. How the cape pigeons shame our aviators. They glide around the stern of the ship by the hour without moving a wing, now mounting high over the water for a fresh swoop and then scudding along with the tip of their wings clearing the sea but an inch or two but never touching.

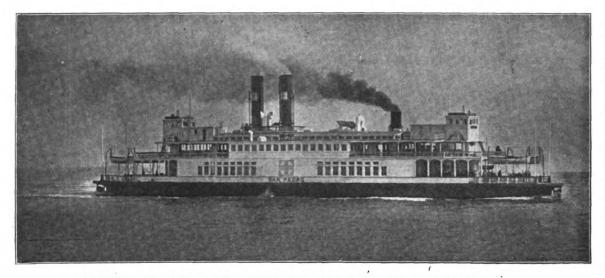
Through the tropics the temperature of the sea water had ranged from 78 to 82 degrees, but after rounding St. Roque it gradually dropped to 66. Then came the real dip into cool water when the temperature of the water dropped from 66 to 44 in twelve hours. There was a scurrying through trunks to produce overcoats and the chief with his switch board keys was a much sought after man to turn on electric heaters. In the dining room where we formerly roasted we now shivered and painting on the upper engine room gratings was a welcome job, About this time, just by way of variety, we caught the tail end of a Pompero, a storm which is common off the



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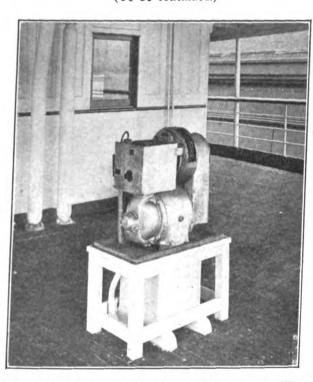


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Platte River, and the ship behaved splendidly though there was really not enough in it to give her a proper tryout.

Our water supply by this time was laboring under grave suspicion. It smacked too much of the sea. Some held stoutly to salt, while others laid its varying flavors to the bitumastic enamel on the walls of the tanks. The knotty problem was solved when one of the tanks was empty and it was found that a patent vent valve to the sea had been leaking enough to salt the water. The evaporator was started up and we were then fed like invalids on distilled water. Jack, our mascot, had become real peevish under the salt water diet, but with the change his temper so improved that he was promoted to the proud position of fifth mate. As to "Polly," she has taken complete possession of the captain's quarters and resents every intrusion. Polly is sensitive, jealous and shy and besides all this the little lady in green has a temper. "Come and kiss me," said Mr. Zeh enticingly, whereat Polly nipped him on the lip and drew bloods Her kisses are reserved for the captain alone.

(To be continued.)



The above illustration shows the Lietz Electric Winding Sounding Machine which was installed on the New S. S. "Congress" prior to her completion at Camden, N. J.

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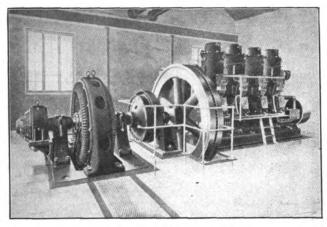
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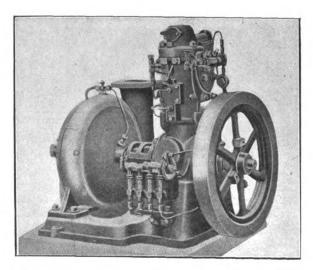
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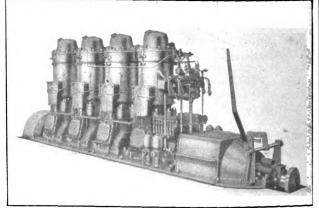
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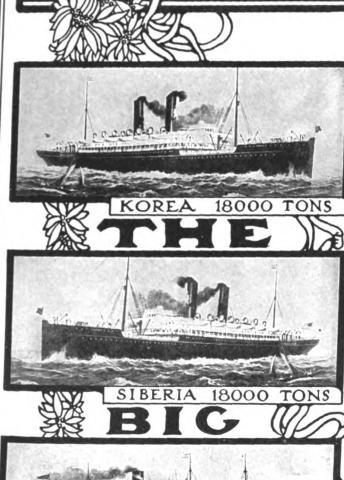


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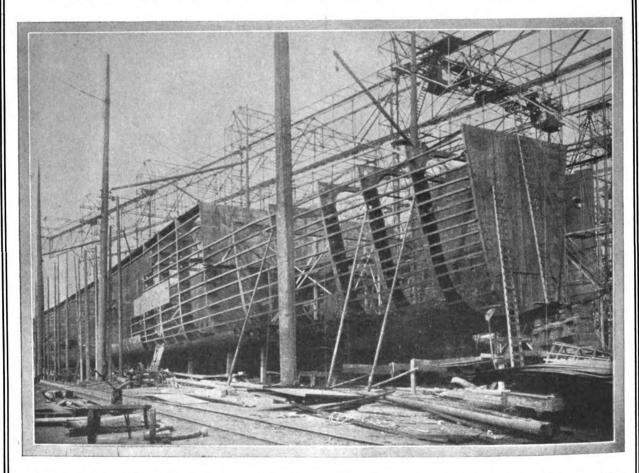
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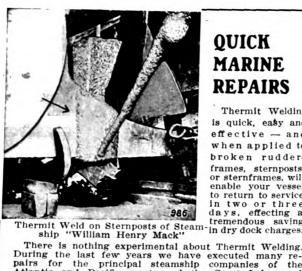
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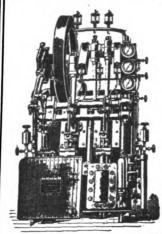


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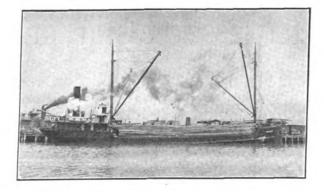
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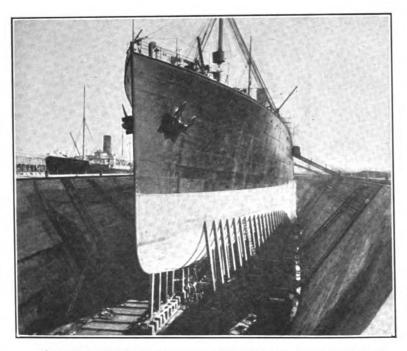
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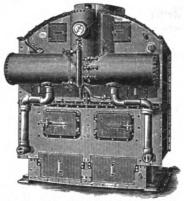
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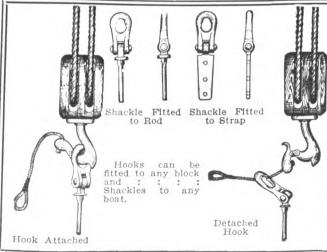
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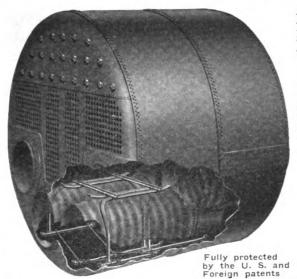


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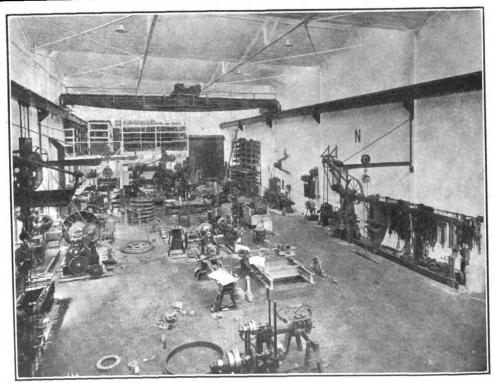
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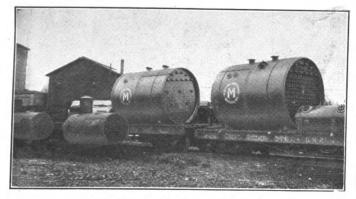
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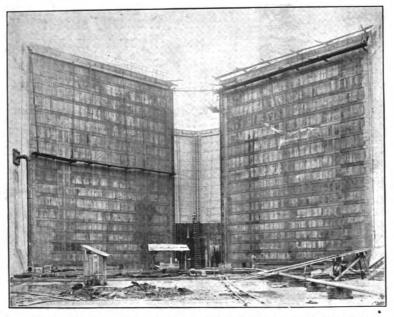
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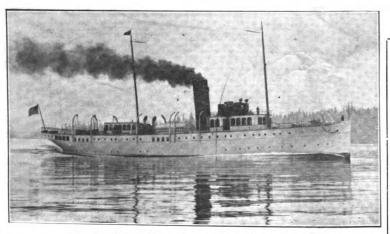
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